COMPUTERWORLD

INSIDE

Executive Report -A few extraordinary staffers can work magic for information systems, Page 69.

In Depth - Is Unix security a contradiction in terms? Page 85.



for 21st century. Page 61. IBM hiked prices 5% Friday for all but a few products and services. The company

aiso forecast lower-than-expected profits due to technology problems that stalled mainframe deliveries Page

High U.S. stakes prompt Japanese giants to pump up MIS marketing efforts. Page 95.

Lotus 1-2-31/2 premiere anticipated this week as upgrade for power-less users.

DEC jockeying to put docu-mentation on CD-ROM disks. Page 8.

Backer update: Two canned, one in the can and a fourth still on the shelf. Stories page 16.

PC payback is 10-to-1 if end-user computing is linked to corporate strate gy, according to investment study. Page 37.

Users cool to PC server claims

Vendors bush faster machines, but LAN buvers tire of bower game

BY WILLIAM BRANDEL and PATRICIA KEEFE

Vendors are lining up for a vendors are sum of springtime chest-beating rally to resition faster and more expenposition faster and more expen-sive PCs as local-area network servers. But their marketing claims may fall on deef ears, with some users holding off on mak-ing purchases until the industry takes a systems approach to LANs.

Compaq Computer Corp IBM and other personal compu er vendors are expected to an-nounce high-end systems based on the as-yet unannounced 33-MHz Intel Corp. 80386 micro-processor, according to industry

make claims of up to 33% improvement in performance, in

BY AMY CORTESE

If ATAT and its Unix Interna-

tional, Inc. supporters are in the same boat, then it looks like mu-

same total, then it total are mu-tiny. In a standards group vote earlier this month, some of AT&T's allies voted in favor of the rival Open Software Founda-tion's graphical user interface

edgeable sources.

At an X/Open Consortium
Ltd. board meeting, a proposal
to adopt OSF/Motif as a standard
interface was approved by a maprivity of the board members in a
preliminary nonbinding vote, ac-

cording to sources at member companies. The eroding support for AT&T's own interface, Open Look, indicates that the OSF

may be succeeding in its bid to wrest away leadership of Unix standards.

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383

for III Unix, according to knowl-

OSF wins Unix interface vote

as opposition breaks ranks

dustry experts said that the pro-cessor will have little to do with LAN server performance. In fact, many corporate users said that little can be done to significantly improve the performance of 386-based LAN servers until Novell, Inc.'s Netware 386 op-erating system ships later this

Not a local phenomenon A survey of 323 companies with mon than 2,000 employees indicates a large demand for network file servers



"A PC LAN server just isn't fast enough," said Ronald Bly-stone, director of management

stone, director of management information services at Harsco Corp. in Camp Hill, Pa. Blystone has implemented an Apple Com-puter, Inc. Macintosh-based LAN. But Harsco intends to ex-pand its use of LANs, and it will opt for a minicomputer-based LAN the next time around, Blystone said, leaving the Macin-tosh LAN for desktop publishing

If there is any degradation ou our LAN, it is directly attrib-utable to the [PC] LAN server," Blystone said. "There's too one said. "There's to

Continued on page 121 interface in every meeting for the last six months, and we're making good progress," said Bill Bonin, director of North Ameri-can operations at X/Open. But be declined to comment ou the re-

orted vote, saying the board tings are confidential. everal Unix International members, including Unisys Corp., NCR Corp. and Ing. C.

Rusinesses glum on

FCC ruling

BY MITCH BETTS

WASHINGTON D.C. - The Federal Communications Com-mission adopted its complex price caps scheme for AT&T last week — a major overhaul of the way AT&T's long-distance ser-yices are regulated — but busi-ness users are not happy with

the outcome.

The PCC gave AT&T so much pricing flexibility for its business services that AT&T private line rates could increase as much as 24% in the next four years, according to Brian R. Moir, counsel to the Internation-

er of network services at LTV Steel Co. in Cleveland, said that Steel Co. in Cleveland, said that is a valid concern. If AT&T's pri-vate line rates do go up, users may want to switch to other pri-vate line suppliers or consider fractionalized T1 circuits, he

naid.
The new regulatory regime, which will take effect July 1, splits AT& I's long-distance services into three baskets: one for nervices used primarily by resiContinued on page 120

Sara Lee's recipe omits data center

BY CLINTON WILDER

The proposal to adopt OSF/ Motif was submitted by ICL, a

European computer manufactur-er and member of Unix Interna-

CHICAGO - You won't find anything larger than a minicom-puter here at the headquarters of one of the world's largest food companies. At Sara Lee Corp.

e-president of corporate sys-ms at the \$11.2 billion firm.

tion of Sure Lee's corporate data center is the re-sult of more than the technologidepartmental systems to per-form mainframe-class process-ing. As the IS function is trans-formed from back-office support to a critical component of front-line business strategy, many

nes as well desi ems — closer to

er is an indent of rtner Group, Inc., a research consulting firm in Stamford, nn. "The power base has

The role of Swoyer and his corporate IS staff of 23 people is to provide a focal point for hard-

TREND SETTERS



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10 AT&T showcases ISDN applications.

12 TRW wins federal ap-proval in acquisition of credit from 16 Cornell delays release of virus report pending crimi nal charges.

16 Computer tampering takes toll on TV euros, oth

UPDATE ROM International Data Corp.'s 24th annual industry briefing last week: "IBM will ship

"IBM will ship 70,000 AS/400s in

nue will double in three years;

revenue into research and de-

tions tripled in three years; and multibillion-dollar computer firms are growing in number, not consolidating." This is an industry that's

maturing?

velopment; 3Com Corp. has

120 Procedure takes the 121 PCs finding their way home from the office. 121 HP dual-bus PC hits

drag strip

Quotable "I wish we could do it over again." MARTINCLAGUE

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perment systems

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ntific arpeggios to the art of pieno making

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climbing the corporate lac of assets and recognition.

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IN DEPTH 85 Tips for making your Unix-based system more se-cure. By Sanford Sherisen and Fred Engel.

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1989; worldwide software revemajor hardware companies are pouring 10% to 15% of annual been shipping 50,000 network interface cards per month, while the number of PC LAN installa-

EXECUTIVE BRIEFING

■ An information systems department without a data center? That's how it is at some companies that are decentralizing and some companies that are decentralizing and recasting their IS departments as corporate standard setters while moving the hardware to the front line, page 1. TRW eliminates the position of vice-president of IS as part of a broader decentralization strategy, page 12.

■ The IS organization of the future will demand three new breeds of employees: those who bond quickly to the business need: those who are passionate about systems de-velopment; and those who see the potential of emerging technologies. But finding and keeping these rare people is getting harder. Page 69.

III if the security of your Unix system is keeping you awake at night, there's good reason. The operating sys-tem has many security flaws. mainframe-based data with a PC look and feel, page 37. Wall Street's Bear Stearns uses interconnected local-metropolitan- and wide-area networks to link everyone to tem has many security flaws.
Fortunstely, there are steps.
IS can take to improve Unix security, and standards efforts will plug many of the leaks. Advice begins on plage verybody, page 51.

to make switched ser more attractive, Page 1.

models to be introduced a month probably won't be LAN performance sig cantly, and users say t

Faced with sluggish sales and eclipsed by the AS/400, the

■ A 1,000% return on in-vestment is possible if your PC plan is linked to specific strategic goals, a Pest Mar-wick survey says. The firm Ouch! That's how so advises against using PCs simply to automate manual functions, page 37. Some firms reap big benefits by users reacted to a price caps scheme for AT&T adopted by the FCC last week. Users fear the overhaul will leave the door open for AT&T to jack up private line rates in order to make switched services

■ 1-2-3 Release 2.2 is set to be amousted this week for low-end PCs. Sources say it is faster and has useful Undo and macro recording features not found on the current ver-tion Penel. Business issues out-pace technology concerns in the minds of IS executives.

■ Is there a Japa m is there a Japanese computer company in your future? Fujitsu, NEC and Hi-tachi are boosting their ef-forts to sell to MIS and acting confident about their chances ■ Be wary of claims that the coming breed of 80388 PCs make superior file serv-ers. The siew of 33-MHs of picking up market she

> ■ End-user training pro grams need to address issue such as hidden costs, the dan of computing errors, idards and the impact of sputers on how work is You can't just tes

M Army training steeled Jack Hancock for a new ca-reer as head of Pacific Bell'a III Users in the news: Classic pisso maker Steinway uses computer-integrated manufacturing to fine-tune production. It has even com-puter-analyzed Vladmir Hos-rowing's concent missair Hos-\$500 million IS department. His new challenge: to build a

B Stacker pleath guilty and may spend a year in juil for penetrating DEC systems

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Lotus to unveil Release 2.2

BY DOUGLAS BARNEY

PALM SPRINGS, Calif. - Ro r will turn to fact tomorrow in Lotus Development Corp. sior Vice-President Frank g officially announces 1-2-3 case 2.2 and unveils previ-by unconfirmed details of Re-

unity unconstruent dectain or no-mea 2.0. "If yet the rest the ra-more und end market confusion, norm und end market confusion, or norm of the rest the ra-gementation. Release 2.2 is an apprade of the existing product or the low-end Intel Corp. 068-style user. Meanwhile, -5-3 Release 3.0 will set its uplate on Intel 80286 or better acchines with at least 116 byte ources said. Lotes declined to comments,

menters.

The disclosures, scheduled the PC Forum show in Palm rings, Calif, and provise the coal spectrum of Lotus cusners with the information sy need to finalize product sming, Utili now, users have inceed in sight into the Lotus rategy only through confidence bettering generally available into the large and of shops.

In the large and of shops, in the large and of shops in the large and the product in the large and the product in the large.

To such the large and the product in the

wirtually the same, Loto: approachabet plans have changed dramatically since the amounco-ment of Release 3.0 almost two years ago. At that time, Release 3.0, which is being written from the ground up in C, was to have been a product for all classes of PCs. The firm stuck to its guns until last year, when it because

Lotas will offer two ways around the memory problem. One is the still-obscure world of DOS Extenders, which trick MSDOS into working with up to 16M bytes of RAM. This, along with an BM Personal Computer AT or better machine, will be a requirement to run Release 3.0.

requirement to run resense ...

A more fundamental solution is Release 2.2, a product conceived after the firm started work on Release 3.0. Though its history is still vague, sources indicate that last year, a group of developers within Lotus and a semination pro-

developers within Lotus and a third-party organization pro-posed enhancing the existing as-sembler-based Reisease 2.0.1. At first, Lotus officials turned down the offers, but they released to the offers but they released to termine the girth of Reisease 2.0. The project has moved quick-ly, in part because of the inclus-tion of technologies Lotus air-ceasly had such as the cell linking and Undo capabilities of Lotus-Haman Access Language, better hown in FRAL.

Retease 2.2 may slow the mo-mentum of Release 3.0, one user familiar with the product said. It is even faster than the already speedy Release 2.01 and works

with existing Lotus add-ins. The system supports the old Lotus file format and uses a special pro-gramming trick to free up an ad-ditional 30K bytes or so of RAM,

ditional 30K bytes or so of RAM, a source briefed by Lotas said.

Two utilities — the Speed Up intelligent recalculation utility, and Learn, a macro recorder — are now built into the product. Release 2.2 will also boast better graphics and offer a taste of so-

alled spreadsheet publishing. Uthough a delivery date is un-lear, many expect Release 2.2 o shin this summer at \$495. ship this summer at \$495.

In a previous interview, King effined three distinct PC configrations. At the lowest level is se traditional PC with 640K ytes of RAM, which is expected

bytes of RAM, which is expected to be served by 1-2-3 Release 2.2. Systems with 1M to 2M bytes will be served by Release 3.0 under either MS-DOS or OS/2. Systems with 4M bytes or more will be served by the OS/2 Presentation Manager.

Cray scraps X-MP line. pushes Y-MP option

BY JEAN S. BOZMAN Auner Numerical Aerodynamic Simulation Division, said the new Y-MP was debugged and running smoothly within 30 days and was in full production by February, The Y-MP, with 32M words of memory, has 1,000 regular users. However, users MINNEAPOLIS - Cray Rerch. Inc. said last week that it using out its 7-year-old X-MP supercomputer line by year's end and moving the X-MP customer base over to Y-MP technology. At the same time,

An eye on business
Cray's expanded Y-MP line is intended to replace the X-MP seri
and is part of a strategy to attract more commercial customers

	Number of configurations	Number of CPUs	(in millions of words)	Price
Y-MP2		1 or 2	16 or 32	\$5M-\$7.6N
Y-MP4	9	1, 2 or 4	16, 32 or 64	\$6.5M- \$13.5M
Y-MP8	6	4 or 8	32, 64 or 128	\$13.4M- \$23.7M
			AVEC	CRAFF DESIGNATION OF

Cray amounced 19 additional models in the Y-MP series, ranging in price from \$5 million to \$23.7 million.

The move comes in anticones in anticonomercial sector and more X-MP customers awaitching over to the Y-MP's 32-bit addressing

acter recognition software only a day before the company's mas-sive layoffs. Although be has yet to receive it, Punicki said that Plenus did promise to send it. It also comes about one yess before the anticipated announce-ment of the Cray-3 high-end su-percomputer. Cray-3s are ex-Another customer, Pruden-tial Insurance Co. of America, agreed to a \$10 million multisite system last October to manage the work flow of its life insurance pected to arrive at customes sites by late 1990, Cray spokesunder writing process. A spokes-man refused to say how the com-pany plans to cope with the bank-

men saic.

With upward compatibility in place, the X-MP's days are indeed numbered. "We'll be plassing over to the 'MP' by the end of the year," Cray spokeaman John Swenson said last week. "But we wanted to make sure that our X-MP' customers felt have sure that have been the said seed." they weren't buying into a dead-end product."

end product."
The first eight-processor
Cray Y-MP/832, which was
shipped to the National Aeronautics and Space Administration's Ames Research Center in
Moffett Field, Calif., has been
running at Ames since August.

months after the first Y-MP pro-cessor was amounced. Compati-bility came in the form of X-MP Extended Architecture, while allowed X-MP 24-bit programs to run in a 32-bit mode. (Despite the addressing change, all Cray machines still use 64-bit word

continue to submit longer jobs to the Cray-2, which has 256M words of memory, he added. "The new machines have some anomalies when they first come in, but we enjoy solving the problems that make them stable for production," Barton said. Both the X-MP and the Y-MP

can run the same programs un-der Unicos, Cray's Unix operat-

A Cray spok A Cray spokesman said that the company is encouraging Unicos use for all its machines and that Unicos will be the only operstring system on the Cray-3.

Cray began offering X-MP users upward compatibility with the Y-MP last May, three months after the first Y-MP processor was encouraged CompatiCOMPLETERWOOLD

Plexus Computers files for bankruptcy protection

BY J. A. SAVAGE

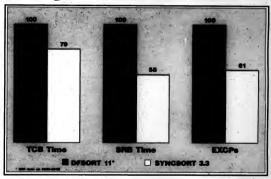
SAN JOSE, Calif. - After firing e-quarters of its employees er this month, Plexus Com-rs, Inc. filed for Chapter 11

m for almost s year. Valle they still have an 800 er for system software, swe to get out there for ap-

petition. The company had revenue of about \$27 million on its imaging systems in 1988, not enough to make it profitable. It has been funded by a group of venture capitalists since 1980; early this month, the group puffe of the leaving the company to operate

ruptcy reorganisation. Ironical-ly, Prudential, as an institutional investor, is also reportedly listed as a creditor in the Chapter 11

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Air Force 3B2 minis don civilian garb

BY ROSEMARY HAMILTON AT&T last week rolled out new 3B2 minicomputers and said it hopes its big U.S. Air Force con-tract win late last year will help the 3B2s become a favorite of

the 3828 become a tavorice of corporate midrange uners. Coinciding with this introduc-tion, AT&T lowered midrange and former high-end 3B2 system prices by 12% to 30%.

The 3B2/1000, which tops out at 16 million instructions per second, is based on a multipro-cessor architecture and uses the est microprocessors devel-ed by AT&T. It will serve as e new high end of AT&T's 5ar-old minicomputer line. With the Air Force contract

still a fresh memory, the compa-ny is hoping commercial users will view the Air Force selection some 20,000 systems as a mpany's product, according to mes Clark, product manage-ent vice-president of minicom-ters and high-performance

However, some current 3B2 they weren't interested in pur-chasing another AT&T mini-

computer. Cedar Fare in Sandus-ky, Ohio, an amusement park and hotel management firm, uses a 3B2/600 as an apolicauses a 3B2/600 as an applica-tion-specific system in an area of limited growth, said Don Race, director of information systems. "We're really an IBM shop, and we don't plan on pursuing Unix," be said.

Plans to sell minis Chris Porch, vice-oresident of computer operations at Pacific Century Advisors, Inc., a finan-cial services firm, said his company plans to sell its 3B2 mini pany pans to sell its 3BZ mun-computers in favor of a new local-area network strategy. The 3B2/1000s are the com-mercial version of the system that the Air Force selected. The

winning system was a modified 3B2/600 that included multipro-cessors and a version of Unix transaction processing with sup port for multiple processors and higher data availability.

The 3B2/1000s use a man-

ter/slave processing concept, al-though system calls that do not involve I/O devices can be made from any processor in the com-plex, according to Steven Les-

DEC launches PBX tools based on CIT blueprint

BY PATRICIA KEEFE

STON — Seventeen months er it first announced its emputer-integrated Telepho-(CIT) Program, Digital juipment Corp. last week un-apped the first North Ameri-

Featured were the first off-Featured were the first of-te-shell packages targeting out-to-private branch exchange PBX) links, taking users a step eyond mere physical integra-tion or the ability to just pass sice/data signals over the same

"Neither AT&T nor Rolm s an off-the-shelf product with flexible applications interface at can support a wide variety applications," said Robert smeron, associate director of

CIT — which some analysts say is simply DEC's phrase for integrated Services Digital Net-work (ISDN) — is intended to

ing computer software into the switching capability of the tele-

these applications, which are heavily focused on customer ser-vice and telemarketing, are targeted at very narrow markets. John Scoggin, supervisor of network operations for Delmar-

va Power in Newark, Del., agreed. A big user of Northern Telecom, Inc.'s SL/1 switches, narva uses DEC machine m. Most of its cust sign. Most of its customer ser-vice applications are IBM CICS-based. "As a result, integrating Northern Telecom in with the

Northern Telecom in with the BMR environment would be a lot more useful to us." he said. For the U.S. and Canadian markets, DEC introduced two products based on CIT and Northern Telecom's ISDN Ap-plications Protocol (ISDN/AP) products: the VMS CIT Server and the VMS CIT Applications Interface.

Interface.
The VMS CIT Server is said to link a DEC VAX to a CIT-com-

Typical CPU

WE32200, \$39.900 WE32200, 16M bytes 7 MIDS eso ooo WE32200, 24 MHz

eitions the 3B2/1000s as a ree-model series. It includes a odel 70, which is a Model 60 The 3B2/1000 series cor and 80, that use the same AT&T 32200 microprocessor. The higher end Model 80, however,

runs it at a faster speed. AT&T

600s and 700s can fie

SOURCE: ATAT

AT&T's Datakit takes on Meridian

BY ELISABETH HORWITT

BASKING RIDGE, N.I. - ATAT =

Switch in a common previous requirest pro-cess. "ART' had provided by Datable of the regional proving companies that worked to a cred and the common process of the common pro-tess of the common process of the common pro-tess." The common process of the common pro-peration common process of the common pro-peration common process of the common pro-peration common process of the com-panies of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-sense of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common process of the com-ton of the common process. The com-ton of the common proce

"Distant can take the pace of an uses groun-end processor, providing connectivity for both synchronous and asynchronous devices," claimed AT&T staff manager Todd Giacobbe. "It targets mera with mostiple hosts and LANs at different locations, we definitely see it as

to access these services — including a SSM sec. metropolism-sees networking capable that ATAT is planning to add to the carrier. The state of Datable has the second of Datable has seed about a second capable of the carrier of Datable has seed about a second capable of the second capabl

\$450 to \$14,250, are slated to data processing applications with the SL/1 switching ser-

vices. Pricing ranges fr \$10,000 for the SL/1SR \$20,000 for the SL/1X. The VMS CIT Server, pri

elopers unveiled applications assed on the DBC and Northern felecom development tools: In-resistion Builders, Inc., Amerirormation Builders, Inc., Ameri-tech Information Systems, Inc., NPRI, The Data Group Corp., Turnkey Systems Division of SMS and Volt Delta Resources,

orthern's Meridian SL/1 — to

Northern's Meridian SL/1 — to bring integrated voice/data ap-plications to the deaktop. DEC's CTT Applications In-terface reportedly provides pro-grammers with a library of VMS

routines with which to initiate

Token-Ring chip delays stall vendors

BY PATRICIA KEEFE

Late chip deliveries for the next-genera-tion 16M bit/sec. Token-Ring are muck-ing up the agendas of third-party suppliers.

Most of these Token-Ring vendors are busy revamping their 16M bit/sec. card strategies and delivery dates, which reportedly will be thrown off by late chip de-

s from Texas Instruments, Inc.

refridge and entering date, was a setering of the second of the second

Perhaps more of a concern to third-nty Token-Ring suppliers is exactly by TI plans to respond to IBM's switch-le 4M/16M bit/sec. chip.

able 4M/16M bit/sec, chip.

IBM has been shipping a deal-mode card. The major difference between its chip set and T1's, according to Swift, is that IBM handles 16M bit/sec, speed with one chip. In T1's case, vendors would have to use two processors to BM's one. To switch over to 4M bit/sec, speed, both

IBM and TI use external circuitry. TI's dual front-end processor ap-roach is neither as economical nor as

proach is neither as economical nor as clean as BM's single-processor strategy, Swift said. "BM definitely has a higher level of integration," Haugdahl agreed. However, Pulse Engineering, Inc. has introduced a dual 4M/16M bithsec. front and that was to his severe to T'', exclu-

end that may be the answer to TI's prob-lem, Haugdahl said. Competitors are also uncertain about thether to build 4M, 16M or 4M/16M

bit/sec. cards.

The big question appears to be whether most users will pay more for a dual-mode card. IBM has priced its dual-mode adapter just \$150 higher than its carrent 4M bit/sec. offering. Given this pricing strategy, there are those who say the 4M bit/sec. card is dead; for now, no one is e to bet on it.

Compaq service gap galls users

BY JULIE PITTA

Corp.'s decision to terminate its associa-tion with Businessland, Inc. has users still scrambling to find alternative sources for from the date Businessland will cease sell ing Compaq PCs. Typically, Compaq sys

ms come with a one-year warranty hon-ed by the company's dealers.

Despite user irritation over the dis-

rty service organisation for m ne. "We don't use it for the Co

VSAM DATA COMPRESSION Without the CPU Overhead

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BIG CLUSTER

NEWS SHORTS

BM as PCM

Notes as PLVM
A bit of role reversal may noon be taking place in Japan. Last
week, ISM Japan reportedly outlined plants to gain more main-mass market abare in that country—currently dominated by
Hitzchi Let. and Fujitus Let. — by expanding its hardware and
software offerings that allow users to run both competitors'
software out Blist mainfrances. One industry analyst likened the move to a classic plug-compatible manufacturer (PCM) strate-gy, only this time IBM is the PCM. Users will apparently be re-quired to run IBM's Processor Resource Systems Manager to set up a separatin Fujitsu or Hitachi operating environment.

Retail group in antivirus role

At the required of specially-chain MRS secretives, the National Retail Merchants Association in New York has agreed to be-Retail Merchants Association in New York has agreed to be-to general manifestables residing. The Retail Years Costrol Center is charged with recording reported virus attacks or re-tail communications networks and who ollecting and distrib-uted communications networks and with collecting and distrib-uting information about products and methods that can be used to ward off or recover from the effects of a virus.

ETA posts bounty

Get your pencils altarpeared and adjust those thinking caps. Control Data Corp., and its supercomputer subsidinzy ETA Sys-tems. Inc. have offered \$50,000 to anyone demonstrating a manazively parallel computer complex—one containing at least manively parallel computer complex—one containing at least 1,000 processors—that can perform a set of real-work benchmarks at supercomputer speeds. The firms said the competition is meant to spur innovation in supercomputer use.

Convergent spin-off

Convergence spare-OFT
A team of private investors last week acquired it igntion-support software insider Document Automation Corp, from Coport software insider Document Automation Corp, from Coport software investors that the company incides investors the Hypit as chairman and chief exacpany incides investors then Hypit as chairman and chief exacport officer, Statistic Morganeties in a president and Edward H.
Carlson, formetry at Oracle Corp,'s federal systems group, as
an exacutive vice-president. The price was not dischools

Grid turns to desktop

Grid Systems Corp., long known as a maker of high-end laptop computers, last wook introduced its line of dealtop personal computers have on introduced its line of dealtop persons sors, including a 20-MHz intel 386-based model with IBM? Micro Channels. The machines are made by Grifs parent Tandy Corp. and have been modified in appearance and fea-tures to set them off from Tandy dealthp fine.

Wang loys off service workers Wag Laboratories, lin. Int week confirmed a minowiel lay-off of 180 field service employees and more consolitation of those offices. A pulsaroum said the cathests fellowed a review "cercaine efficiencies and general product liabilities." He claimed Wang will be able to provide the same or better quisity just of hardware servinies, Wang also done data Lowell. Mans, regional call-in nervice center, which affects about 100 people who will be differed to the remaining two centers.

Navy suspends Unisys
The U.S. Navy has harred three Unisys Corp. defense units
than theoretical progressions becomes until it can thumb
the record procurement scandal. The more affects until that
the recent procurement scandal. The more affects until that
account for short 75% of Unisys? 24.1 billion assued defense
revenue and came despite months-iong investigative cooperation by the firm and the distinuised of 15 Unisys resocutives.

CDs hold key to DEC software

BY AMY CORTESE

Digital Equipment Corp. today will be one step closer to its vi-sion of baving all its software and documentation on every custom-er's desk. The company will make available on one compact disk the complete VMS and Dec-windows documentation which in paper form spans 15 feet of shelf space. The move is the latest in

tion strategy, in which it plans to CDeventually predisand control access through the use of codes to "un-

lock" programs that a customer has licensed. New CDs with updated software and documentation would automatically be sent to customers

Last April, DEC announced that VMS was available for the first time on compact disk. Be ginning this January, it has of-ferred what it calls "consolidated software distribution," bundling VMS and "layered" software vMS and "ayered" software products on one CD. The first consolidated disk included 50 software programs in addition to VMS; with the March release,

OSF wins

central site."

Distributing software on compact disks will benefit customers as well, according to Pastomers as well, according to Pastomers as well, according to Pastomers as well according to Pastomers as well according to their ease of installation, under DEC's prodistribution program, there are now 70, including compilers, computer-aided software engineering tools and worksta-tion software.

that if X/Open were to make a decision in any area, USO would

decision in any area. USO would provide something compliant or, if generally available on the market, support that specification. X/Open commands wide-spread international support and has been the point of convergence for many Unix issues. The group's endoctement of Modif is likely to solidify independent considing it unlikely that tuents will see a competing standard from anyone other than AT&T and its closest alies. Olivetti & Co., broke ranks and voted with OSF, according to the sources. The only opponents to the proposal, they said, were AT&T, Sun Microsystems, Inc. and Prime Computer, Inc. Signif-icantly, the X/Open board is composed of half Unix International members — which back AT&T and its Unix System V and half OSF members. Because the vote was nonbinding, the

Coosest allies.

X/Open members contacted
would not discuss details of the,
board meeting; however, Jim
lasak, Posis strategy director at
DEC, said it is "reasonable to assume that X/Open is aggressiveby evaluating Motif."

Several Unix International

embers contacted declined to comment on their user interface plans. A spokeswoman for Un-isys said the company "would rather not comment at this time, because there are a number of decisions pending."

However, Hans Koppen.

Although DEC acknowledged that only a small part of its cus-tomer base has taken advantage

eliminated.
Robert Rankin, operations supervisor at Hughes Network Systems, Inc., said that although unit all its customers will want to migrate to CD. DEC officials said the firm will continue to offer software on the traditional pa-dia as lone as 4of the new program, it expects his shop does not have a CD play the nrm was continue to other software on the traditional me-dia as long as demand exists. While users contacted last week expressed interest in soft-ware distributed on compact er yet, it is seriously considering it. "CD is not a thing of the fu it. "CD is not a thing of the fu-ture anymore — people are warming up to it." Rankin said his shop, which is cramped for space, has three offices full of documentation that could be re-placed by a few compact disks. sks, managing the increasing slumes of documentation was

Good or large vendors Jay Bretmann, a senior analyst at market research firm Interna-tional Data Corp., said that dis-tributing software on CDs makes tation is what justifies the expending the result of the second states in the second states economic sense for large sys-tems vendors. However, their tems vendors. However, their customers still need to be cov-winced of the benefits. Beet-mann predicted 1990 will be the year when software distribution on CDs really taken bold. The VMS documentation CD

version appealing. Noting Allen Bradley's four data centers, each with its own VAX cluster, Krue-ger said, "It would be nice to let will cost approximately \$900 according to DEC. VMS soft ware on CD is available und maintenance contract for the identical license fee, regardless these people have access to up-to-date documentation from a

identical license fee, regardless of tape or CD.
Aithough Ultris is not currently available on compact disk, DEC plans to offer all of its software, including Ultris, or CD technology. The recently associated beattop VMS, as easier to install version of VMS that runs on the Decutation 3100, comes only no compact disk.

tif and as yet has no firm plans for Open Look. He said Motif would gain more widespread support by third-party software develop

ers.
Also before the X/Open board
is a proposal to adopt OSF as a
full board member. An OSF
membership could tip political
balance in its favor.
Steve Lowen of X/Open would not comment on an OSF membership application. But one source claimed that Kayner "has ken it on as a personal project

to see the group is not allowed in." Another source confirmed this, saying, "Bob Kavner is working that issue very hard."

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proposal will be voted on again at the next board meeting, to be

off from its previous uncondioff from its previous uncondi-tional support of Open Look, AT&T's designated user inter-face. After deciding not to bus-ing release of Unix System V, Robert Kavner, president of AT&T's Data Systems Group,

indicated that if Unix International members were in favor of

held in Tokyo in May. At a press conference in Janu-ary, Unix International backed

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called Structured Query Language, or SQL. Then, in 1979, two years before IBM delivered SQL/DS, Oracle Corporation delivered the first commercial implementation of SOL and has since become the largest database company in the world.

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lust as SOL was the future of data management in 1978, SAA is the future in 1988. Make an Oracle seminar part of your future, today. Call 1-800-345-DBMS to reserve your seat in the next Oracle seminar in your area: So you won't be somebody else's first customer, tomorrow.

U.S. SEMINAR SCHEDULE

Fast-packet net technology ready to roll

BY ELISABETH HORWITT

packet technology, which has im-ned for years on the drawing boards my communications vendors, is set ret onto the scene as the likely foun-n for the next generation of high-

technology tar to CCITT X.25 et switching in that it transmissions from

from AT&T Network Systems that will allow carriers' existing central office switches to support fast-packet services, company spokesman Arnold Heiber said. Such services will provide additional intelligence as well as speed, Heiber said. For example, customers will be able to al-locate bandwidth to different carrier ser-

type of service, he added. This is because one general-purpose first-packet switch has both the bandwidth and the technol-ogy to handle a wide variety of media and services. Also, the technology "allows you to put all kinds of flexible instructions in packets." Helber said.

"I think fast-packet is strategic be-crease it will media from the con-Leaps and bounds

mark market	speed.	speed	multivender intersperability	Punctions
DN	1.5M bit/sec.	100M bit/sec.	Yes	Voice, data, video, image
nditional reuit- ritched tworks	45M bit/sec.	100M bit/sec.	No	Voice, data video, image
cket- itched tworks	64K bit/sec.	1.5M bit/sec.	No	Data
at-packet	1.5M bit/sec	100M hit/sec	Yes	Voice, data,

wice, data, video, witching to run over the ISDN 64K bit/sec. B chansmage ar DONN 105K bit/sec. B chansmage fart-packet with the ISDN 64K bit/sec. packet witching "all the way to the user' a deal," he solded. For this to happen, fast-packet and ISDN technologies need to join hands. One hopeful sign that this will happen — LAPD Frame Relay, a protocol that could

type of service, he added. This is becau

technology at Chevron In-formation Technology Co. inc. "We're talking about ISDN too — which gets its Services Digital Netwo and costly to get packet

What we're dealing with

be the basis for a future high-speed, or broadband, version of ISDN — is current by in the ballot phase at the American Na-tional Standards Institute. Some vendors **Showcasing ISDN applications**

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Relational Architects, Inc.

BY JEAN S. BOZMAN

SCOTTSDALE, Ariz. - AT&T last week drew major computer vendors into its quest for MIS and telephone company

its quest for MIS and telephone company support for ISDN technology.

After years of preparation, AT&T was able to showcase integrated Services Digital Network (ISDN) applications on equipment from such mainstream ven-dors at Tandem Computers, Inc., Digital Equipment Corp. and Wang Laboratories,

AT&T executives demonstrated aer-arial ISDN applications — most of them directed at micro-to-misinframe connec-tivity and local-area networks — at the firm's Netpower seminar.

The software applications were direct-of at the health, education and manufac-turing markets. Bauter Healthcare Corp. mid its Amnico Systems Division, which me medical networks at 60 sites inclos-men medical networks at 60 sites inclos-

medical centern.

The Baxter application, called Annuouink, uses AT&T's ISDN service to gather medical records into a single, permanent patient file. Compiled information can be accessed from networked personal hire not

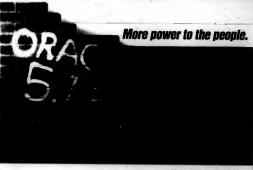
ns — even those in an IBM System twork Architecture network. "You exchange details and architecture network."

six transcenses at the same time over sixting copper wire."
A third developer, The Software Link, c. in Atlanta, Ga., added ISDN's call-entification feature to its PC-Modular perating System software. The soft-sare package summons up relevant data, ch as a customer profile, just as a tele-

Targeting marketing efforts at loca one companies and regional holding impanies, AT&T executives said those priers must buy into the ISDN concepbefore end users see ISDN products of ferred as value-added information ser

Despite the demonstrations, most ap-plications are still on the drawing boards including applications now being develincluding applications now being do oped by DEC and IBM. At the last min IBM declined to appear at the Netpo showcase, AT&T said.

AT&T is not ruling out further im-swement in bandwidth, which would ng about an era of broadband ISDN But AT&T had no comment on how to years away high-speed ISDN may be.



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TRW picks up Chilton

Deal boosts firm to 40% presence in credit bureau industry

BY MITCH BETTS

TRW, Inc. won federal approval last we to acquire Chilton Corp., a merger that will increase TRW's power in the creditreporting industry and reduce the num ber of wendors with national credit data bases from four to three.

bases most route to three.

The \$330 million business transaction between the two national credit nations will be completed this week, a TRW apokeswoman said. The proposed acquisition raised antitrust concerns, but the U.S. District Court in Cleveland last week approved an antitrust settlement between TRW and the U.S. Department of The \$330 million bus

intice.

The three remaining vendors of data processing services for credit bureaus will be TRW Information Services Group, based in Orange, Calif.; Credit Bureau, inc., an Atlanta-based subscillary of Equitax, inc.; and Trans Union Credit Informatics, inc.; and Trans Union Credit Informatics.

saes, same, same i rame transon credit information Co. in Chicago.

The TRW-Chilton merger gives TRW aroughly 40% market share, according to one account. Historically, TRW's strength has been on the East and West Coasts, while Chilton's strength has been in the Midwest Chilton, which in a subsidiar of Borg Warner Corp., is based in

The Justice Department initially ob-jected to the merger on grounds that it would reduce competition in 16 geo-graphic markets in which TRW and Chil-

graphic markets in which TRW and Chai-ton are the main competions. But in November, the department and TRW managistated a settlement that allows the mergar under the constition that TRW dis-teresting the control of the control of the persona in those 16 markets or sells is lo-cal database to another vendor entering the local market.

The financial and retail industries that the productions to the merger. In fact, the managing of the control of the control of the personal control of the control of the control of the personal control of the control of th rting networks from four to three uld be beneficial because it would give an more comprehensive credit data

while preserving adequate competition, the Justice Department reported. However, some local credit bureaus did oppose the deal because the consent

did oppose the deal because the consent decree requires them to cancel their suc-cessful affiliations with TRW or Chilton and align themselves with a less-estab-lished vendor in their local markets. In addition, they complained that the merger will eliminate the fourth vendor of ata processing and network services. The national vendors store, process and ransmit credit data that is collected and old by local affiliated credit bureaus.

Carving from the top

CLEVELAND — TWW, Inc. has eliminated the position of Bichard Koolley, vice-product of information services, in a continuation of its strategy to shrink its production of the strategy to shrink its foodless, and the strategy to shrink its foodless, and the strategy to shrink its foodless, and the strategy to show that the strategy to show the strategy to show the strategy to show the strategy to show that the show that the show that the strategy to show that the show that th

"if they're changing their strategies, that a fine, I'll be jooking for challenging seignments elsewhere," Koeller said last week. "I'm very upbeat." Koeller declined to comment on who would be considered TRW's top IS exec-utive after his departure.

CLINTON WILDER

Sara Lee

CONTINUED FROM PAGE 1

thought five years ago and made hard rules out of it, you could have a problem." The closing of Sara Lee's corporate data center was one of the first actions taken by John H. Bryan Jr. when he be-came chairman in 1976. "We have a very strong corporate philosophy of decentral-ization," said Michael E. Murphy, Sara Lee's executive vice-president and chief financial officer. "It didn't make sense for us to be holding the operating unit presi-dents responsible for their own profitability, yet forcing the cost [of corporate IS]

At Sara Lee's corporate offices over-looking Chicago and Lake Michigan, there are almost as many PCs as people, Murphy said. The 250 PCs and one Digi-

tal Equipment Corp. VAX are enough to basically handle all corporate applications. The decision to close the data center was not based on any insight "into what would happen 10 years later with distrib-uted processing," Murphy added. "We ust thought it was the best way to run th Swoyer hosts an annual meeting of IS

Swoper hosts an annual meeting of IS managers from all units so they can find common ground sund the substitute of the s

swer the questoo, "Would a single arran-tecture make sense?" Swoyer said.
"The answer was yes. We figured we will are \$2 million in just one of our compa-nies over four to five year."
"Swoyer describes Sura Lee'a central-ized corporate 15 functions as "thinking, research and planning, To justify a corpo-rate data center, more and more firms

have to run an operating division's com-puting in it," be said. "We don't need a lot of computing here."

nes in sev tries have come to similar conclusions: • American Express Co., a \$23 billion fi

e Last year, Kendall Co. closed its IBM 3084-based corporate data center in fa-vor of AS/400-based processing in each of its five divisions (CW, Feb. 20). • The main function of corporate IS at Cox Enterprises, Inc.'s Attenta basedquar-ters is to collect and consolidate financial



HE INFORMATION systems executive function "is like driving a car. The computing activity, like the car engine, is running somewhere else. not where you're sitting.

VINCENT H. SWOYER

SARALEE

only CPU required there is a Hewlett-Packard Co. minicomputer. All other ac-tivities, including setting standards as scopiring equipment, are handled by the includual MIS directors in Cora Set. TV, newspaper, automobile section and commercial broadcasting divisions. In addition to the need to pash applica-tions not to the business units, first and the present and the past applica-tions not to the business units, first also reacting to the need to cut costs —

and a corporate data center and staff is not cheep. "With the merger and acquision mania, you have to get rid of over-ad," Swoyer said. "Smaller is very ap-

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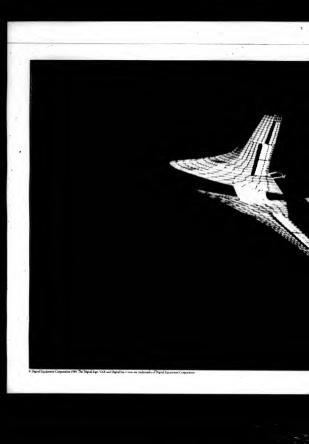
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Bruce H. Rampe President/CEO BBN Software Products Corporation

Cornell delays release of virus report

BY MICHAEL ALEXANDER

ITHACA, N.Y. - Cornell University officials have completed a lengthy report that details how the university's computers were used to inject a worm into the Internet computer network last November but have delayed publicining the finding pend-

ing any criminal action.

The report will not be made public until after the U.S. attorney here decides whether to charge Robert Morris Jr., the Cornell commuter science graduate student believed to have masterminded the worm attack, university officials said last

'My hope had been to release this report in full after I had an opportunity to re-view it," Robert Barker, Cornell University's provost, said in a prepared

"However based on discu ersity counsel and at the specific request of the U.S. attorney and the attorney for Mr. Morris . . . I have decided to delay release of the report until the U.S attorney decides the legal actions he in

tends to pursue in this matter," Barker said. "At that time, the report and all of its endices will be made available for out-

be introction Barker also said that he would recon sider March 31 whether to release the report if Frederick Scullin, the U.S. attorney here, has not announced what lega action he intends to take. "I fully appreci ate that the scientific commu serves to know of the findings of the investigation," he said

No comments Morris could not be reached for com-ment. He is on a leave of absence from

Cornell and is reportedly staying at his narrents' home in Arnold Md. Thomas Guidoboni, a Washington, D.C., attorney representing Morris, confirmed that be wrote a letter to Corne University legal advisors expressing con-cern that the report, if it placed the blame on Morris, would influence his right to a trial with an impartial jury. "While I did

not see the report, my view was that it might be prejudicial to Morris," Guido-boni said. "Apparently, the U.S. attorney Sculin and U.S. Department of Justice officials in Washington, D.C., did not return telephone calls seeking comment on

Cornell'a report, which is between 160 and 200 pages including appendices, was compiled by a committee of university of ficials headed by Stuart Lynn, vice-presinease nesses oy Scurr Lynn, wce-pres-dent of information technologies. "It goes into the involvement of Cornell's comput-ers, the role that Morris is alleged to have played, Unix security and other issues re-lated to networks," said Dennis Meredith, a university spokesman.

A university disciplinary board will deterine what actions, if any, it will take against Morris after the report is resed, Meredith said.

Justice Department officials are re-portedly divided on whether to allow Morris to plead guilty to a misdemeanor or to prosecute him on more severe charges as a deterrent to computer crimes (CW, Feb. 6).

"If the U.S. attorney fin Syracuse) had "Il the U.S. attorney (in Syracuse) had a clear view of this case, be would have made a decision by now," Guidoboni said. The decision will be made by Justice Department officials in Washington, D.C., he added: "They are the ones who are he added: "They are the ones who are dragging their feet. They are more inter-ested in getting robbers and dope sellers, that is more important than getting Rob-ert Morris. He is not some criminal king-pin. Robert would like the issue to be resolved, but I am not surprised that it

TV news execs ousted after hacking charges from rival

BY MICHAEL ALEXANDER

TAMPA, Fla. - A Florida television station fired two news executives in the wake of reports that one of them allegedly

WTSP-TV (Channel 10), an ABC affiliate in St. Petersburg, announced last week that it had fired Assistant News Di-rector Michael Shapiro and News Direc-tor Terry Cole. aro was arrested Feb. 7 on felony

charges for allegedly breaking into a com-puter system at WTVT-TV (Channel 13) on at least six occasions in January [CW, Peb. 13]. He was once employed by

tion's computer systems.

Law enforcement officials seized from Shapiro's home a personal computer, 200

He has been charged with 14 felony nunts under Florida Statute 815, which covers computer-related crimes. Each

count carries a maximum sentence of 15 years and a \$10,000 fine. Vince Barresi, WSTP's vice-president d general manager, refused to com-ent on the two firings. However, in a pared statement, be said that he told viewers during an 11 p.m. newscast last Tuesday that the station acted to "avoid any questions about the objective way we

do our business in keeping the public in-Cole, who hired Shapiro last Septem er, has not been charged by Florida law rding to one source, because as director of the news room operations, he is held ulspiro and Cole were unavailable for

violations, is denied bail by judge BY J. A. SAVAGE

Hacker pleads guilty to computer

LOS ANGELES - Kevin David Mitmick. the hacker deemed too dangerous to he let out on bail, pleaded guilty to two crimi-In early January, Mitnick was detained

under strict measures at the request or prosecutor Leon Weidman, who aske the court to view him as a risk and a dan-ger to the public. The U.S. Attorney's Of-fice asked the court to deny him access to telephones for fear be may have prepro-

ammed a computer to trigger programs tha phone call, according to Weidman. Mitnick pleaded guilty to two counts: emputer fraud, for entering Digital

computer fraud, for entering Digital quipment Corp.'s computer system, and reaking federal law by having more than 6 unsuthorized phone access code. Under the original indictment, which schuded defrauding MCI Communica-tions Corp. and transporting stolen infor-nation across state lines, he faced 30 certain prison. Michick pleased on guilty o the original charges in January.

schange proposed oth the U.S. Attorney's Office and Mi

soft the U.S. Attorney's Utice and Min-mick' a lawyer agreed that in exchange for the plen, Mitinsk would serve one year in pill and three years of probation, accord-ing to a spokeswoman for the U.S. De-puttment of Justico. They are recom-mending that the court follow the agreement. Mitinsk is scheduled for sen-tencing in late April.

tencing in late April.

The bargain was struck after it was de-termined that damages to DEC, including downtime and searching for the intruder, amounted to between \$100,000 and \$200,000, not the entire \$4 million origi-nally identified in court documents, ac-

rding to the spokeswoman.

While still in joil awaiting senten-itnick will be allowed to use teleph

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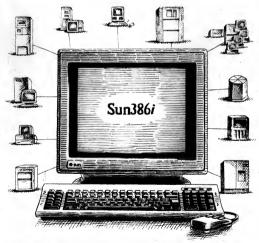
The conference will be chaired by

Bill Harmar of Imperial Oil Canada and will take place in downtown Toronto at the outstanding CN L'Hotel

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hieroglyphics of yesteryear. The Sun386i, with its point-and-click interface and Hypertext help system, is easier to use than most any personal computer.

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EDITORIAL

Fund education

HE EVIDENCE OF looming and possi-bly severe imbalances in the supply-demand equation in the information system labor market rapidly builds.

Barring any severe growth disruptions in the U.S. or world economy, which are not likely, we will see the development of a sellers' market characterized by chronic shortages of IS professionals as well as upward pressure on salaries.

Consider this evidence:

 Last week, Computerworld noted that in U.S. postgraduate schools, foreign students make up a growing percentage of graduate MIS programs. At many schools, foreign students, most of whom return to their native lands, are a clear majority of the MIS doctoral students. It is from this group of graduate students that tomorrow's university MIS professors are derived.

The Boston Globe published a study last week

that showed a steady, precipitous decline in the numbers of undergraduate students enrolling in computer science and computer engineering programs at Boston area schools such as MIT and Northeastern University, At Northeastern, for example, enrollment in computer science has declined 31% in four years.

. The following headlines have appeared in the business press in recent weeks: "Census pre-dicts U.S. population drop in next century"; "America's looming shortage of labor"; "U.S. la-

bor supply shrinking.

That's a taste of supply-side labor. Now consider the demand portion of the equation. According to the U.S. Department of Labor's statistics, the number of U.S. workers performing software programming has risen 60% during the past four years. Given that the widespread availability of software engineering tools is at least five years distant, the demand for programmers will continue to rise unabated for the foreseeable future, as will the demand for people to manage programming teams.

And consider the most important factor: Edu-

cation and training resources from both the public and private sectors are going to be increasingly earmarked to somehow retrofit today's burgeoning numbers of young people that graduate from high school but can't tell you in what century the Civil War was fought. Bear in mind that in a recent major study, U.S. students fin-ished dead last behind such countries as Spain and Ireland in a comparison of math and science

Clearly this is a problem of national consequence and must therefore be dealt with on the national level. Instead, in recent years, a combination of federal cuts to higher education and tax limitation initiatives in many states has turned back the clock on progress in education.

Of all the campaign promises made by President Bush, the one he absolutely must fulfill is to become the "education president," But that's done with money, not with campaign rhetoric. We're all awaiting a sincere effort to match the promises with the tough decisions needed to make them a reality.



NEWS TITM: TRANS-ATLANTIC COMMUNICATIONS CABLE VALVERABLE TO DISPUSTION BY SWARK ATTACKS.

This week

in history

The first bill to rewrite the

tition in the U.S. telecom-

munications industry goes to

"Natural monopoly and economy of scales are ideas of the past. Competition and di-

versity are the future," says

Sen. Ernest F. Hollings (D-S.C.), who sponsored the bill.

Gould, Inc.'s Computer Sys-

tems Division announces its

first virtual memory proces-

node 6000 is designed for networked and stand-alone multiuser applications.

the U.S. Senate.

March 19, 1984

sor, a 32-bit mach e that supports Unix and targets Digital Equipment Corp.'s VAX-11 market. The Power-

LETTERS TO THE EDITOR

Al is no worm

Having read Harvey Newmist's "Benchmarking Brainiac 1000" ICW, Feb. 271, I am writing in the sake of fairness to artificial intelligence.

The statement that "today's products can compete head-tohead with a level of intelligence on nor with a worm" is not only unfair but also irrational. The fact that AI has not yet delivered what many people were prom-ised is not Al's fault. The blame is on those who tried to prema turely commercialize it and sell it aggressively before its time

Let's not forget that it took thousands of years for the "natural intelligence" of human beings to reach its present stage. Al is only 40 years old or so: thus, to somehow expect it to deliver results comparable to our human intelligence is not only unrealistic but borderline foolish. The level of "intelligence" of

today's Al (and its offsprings expert systems and neural nets) is much closer to that of a human than a worm. There are already several successful systems out there that are not only quite useful to humans but also capable of becoming more intelligent.

Gus A. Galatianus President

Advanced Computer Consulting. Inc.

Britton Lee serves Regarding "Client/server not delivering" [CW, March 6], Brit-ton Lee, Inc. pioneered the client/server architecure and has shipped more than 1,000 relational database servers based on that architecture to 400 cusmer sites since 1981

Britton Lee systems allow a COMPUTERWORLD

heterogeneous computer envifavorite applications while trans ronment to share common data parently accessing the power of that is centrally located on the shared relational databases. Scott R. Humphrey Britton Lee Sharebase system The system currently supports IBM PC-DOS and VM/CMS Director Corporate Communications AT&T Unix System V: Digital Sharebase from Brilton Lee

Equipment Corp. VAX/VMS and Ultrix; Sun Microsystems, Inc. Los Gatos Calif

Pick of the litter Unix; Apollo Computer, Inc. Ae-gis/Domain; and Pyramid Tech-nology Corp. OSX. Regarding the article on rela-Britton Lee is now shipping

tional database management SQL-based server systems with capacity up to 100G bytes, runsection ICW, Feb. 271, I am conning in production-priented anstantly amazed at what seems to plications in Fortune 500-size be an intentional ignoring of the companies worldwide. It is not Pick operating system. This theory, as the author states, but RDBMS has probably survived reality that "users can run their longer than any other!

I have worked for firms that run 300 to 400 retail stores and use Pick to distribute their entire product line and comm cate with all stores for daily inventory and sales updating I believe it was 1979 when

guru James Martin was informing computer professionals of system . . . Pick. If you would make the effort to research, you would discover that it has through the years maintained its standard of excellence. Oh, by the way, don't give me the old line that it lacks communications. That problem has been

solved for years by merging the Pick RDRMS with Unix. Curtis S. Asbury Director of MIS Holborn Agency Corp

Computerworld unlcomes com-ments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Loberis, Editor, Compu-terworld, P.O. Box 9171, 375 Cochituate Road, Framingham,

New York

ited calls from headbunters are

way down. In the "good of days" of the early '80s, any program

mer worth his weight in DO

loops could expect to get one or

stranger offering the perfect job at twice his current salary. All

that was required was to scratch out a quick resume or a list of re-

cent jobs, deign to meet with th

Not anymore. With hiring freezes, consolidations and —

gasp! — layoffs being the order

who has to do the learner's Even

beadbunters won't take your

name unless your expertise is in high demand. "Do you have any experience in artificial intelli-

one headhunter in-

of the day, it is now the emi

the correct response.

Blam, a former product manu-

Boston-area computer company, new Jures and writes in Carlisle Mass

and you were in.

Investments in people earn commitment dividends



One of the most powerful and elusive qualities of human nature from a manage

ment perspec Consider the state of mind of a person as he pursues a personal objective. There is little question

in his mind about whether he will achieve the goal - only how much time and energy must be expended to do it. Similarly, when people are emotionally committed to mansgement's goals, success is vir-

tually assured In the computer systems profession, the moment of truth recomes in the early hours of the morning - in the unnerving siience of the computer room while attempting to resolve a sudden, difficult problem.

Trua-life advent I keep remembering one such test of commitment that oc curred in the mid-1960s in the Computer Systems Division of RCA Corp. The MIS department there had just finished a major conversion of applications soft-ware from the RCA 3301 to the

newer RCA Spectra 70/45 proof a processor with 10 7M-byte disk drives and 10 high-speed tape drives. The system was primitive by today's standards, but for the mid-'60s, it was con-sidered fairly sophisticated.

All of the typical conversion oblems had been experienced. and the output from the bill of materials procurement system s five days overdue. The senior systems analyst,

Murry, and the lead systems ogrammer, Hans, had volun-ered to work late that night to help solve any problems that

By 2 a.m., they were mes-merized by the flashing lights on the console of the 70/45 as it completed the last processing of the bill of materials procure-ment. A munufacturing facility ne which parts must be pursed for the next man

There were five hours left to produce the output before the vice-president of manufacturing arrived at the computer room to ings for the operating system and worked out a patch to force a uste the progress being made with the procurement soft-ware. He rarely had a problem

Roca Raton, Fin.

finding words to express his unhappiness when anything de-

layed manufacturing.
The system had been running for almost six hours. With only minutes remaining before it fin-ished. Murry and Hans heard the unpleasant sound of the operator's console typing out a warn-

ing message. Before looking at the explanation. Hans made a guest at what caused the problem. "The output tape drive has reached the Indeed, the take-up reel on the output tape drive appeared full - with only a turn or two of tape remaining on the supply reel. Projections had indicated

that a procurement run large

enough to fill an output tage

would not occur for another Silence filled the computer m. An early version of the TDOS operating system was be-ing used, and both Murry and us knew that it could not proce multiple tape-output files. ft appeared to be a difficult situation. A dead end had been reached with TDOS, and the

3301 processor was already dismonthed and packed away for pment. When Murry was faced with a ough problem, be always turns his chair around backwards, sat down and stared off into souce. customarily leaned

ir back against the wall, lit a rette and started to blow They both knew they would

not be held accountable for problems with the operating system but they were not looking for

After a few minutes of silence and about the 10th smoke ring, Hans said, "You know, the last time that I looked at a full reel the tape did not fill it to the limit

of the outer edge."

Murry knew immediately what Hans was thinking. He jumped out of his chair and ran to the tape library. He returned with a new reel of tape and said. You're right. There's enough room for at least another 50 feet

rry quickly removed the tape drive supply reel and with care and precision spliced an additional 50 feet of tape in front of the end-of-tape marker. While Murry was splicing. Hans scanned the program list-

Hans had previously tested the read-after-write logic on the tape drives and knew that it

Carried away by the job hunt

There are lessons in the blunders made by this overeager position seeker



when your resume does not cause dollar signs to flash before their eyes. One such helpful soul DICK BUILD Working in MIS has changed sent me an article entitled "The Top 10 Job Hunting Errors." during the last The list came as no suprise: 1. Poor resume. years. For in

2. Failure to network

3. Limiting job sources.

result in the dreaded crawl-un-der-the-desk-and-hide blunder instead. So as a public service and to balance the scales, f pre-sent my own "Top 10 Job Hunting Excesses:"

1. Concise resume. The

first tenet of resume writing is to



5. Part-time search.

gencer" one headhunter in-quired. "Sure, most of what I say I make up," turned out not to be 6. Inadequate interview prep But there are those head-hunters who are helpful even 7. Poor interviewing technique. 8. Restricted job search. 9. Negative attitude. Poor physical appearance.
 Unfortunately, in my zeal to avoid these little mistakes, f diskeep it short and simple. I did save considerable money, but rinking my resume to fit on th back of a postcard didn't turn ou

to be a winning strategy.

2. Excessive networking
Be more selective than I was when, fishing for leads, I called every business acquaintance in Continued on page 22

Tidbits from the silly-resumes file

ROBERT HALF

should be a wellwritten and concite summation of an individ-

but it is easier said than done judging from the thousands of strange, inappropriate and downright silly items in my "Re-sumania" files. Data processing nana necession.

seekers are no exception.

"Was voted "The Ugliest Man

1985 contest." A

in Town' in a 1985 ca solid DP credential if I ever ard one.

ary required: High six." I'd say \$900,000 a Half is founder of Robert Half Internstions), Inc., a personnel recruiter specis

COMPUTER WORLD

iring in data processing.

"Languages spoken: En-glish, French, Spanish, Cobol." "Solary required: As much as I can get."
"Salary required: High six year is a lot for a programmer in

any geographical market.

Poor spelling on a resume ranks as one of the most common faults, especially for people in technical fields. Mistakes are particularly glaring when a job seeker boasts about the ability to

communicate or about how accu-Brought about incressed a succy in my department."

here.

"Job objective: To utilize my
skills and knowledge with an
arganization that will allow me
to develop my shills." "Arganized shills." counts painful.

"I am a short-elevsed pro-

reammer pursuing a career in he management of a ferneard-coking company." Maybe be'll rear long alceves when he eaches his goal.

"Hobbies: Love to trout fish
with my wife." That poor womn, dangling from a hook and be-

ing tossed into a stream.

"Reason for leaving last job
Maturity leave." She needed ine months to grow up.
"Special certificates: Driv "Geographical preferences: I Russia, Red China, Vietnam or

Russie, Red China, Nietnam or New York City.

"Sengraphical proference: Anyplace in the English-speaking world and/or Washington, De." We might not sheavy michis are saying, but the basic kingange spackes in our nation's capitals English, Ithins.

I don't advocate stating on resumes reasons for leaving previously to the profession of
ying! was simply ping!

"Reason for leaving: Box murdered his usip."

"Reason for leaving: The company made me a scapegoot, just like my four previous employers did."

"Reason for leaving: Salary

"Reason for leaving: Sala rminated." Who could blan

One DP fellow wrote in his cover letter to one of my offices,
"A residue is attached." Maybe
I should start calling my collec-Be careful when you writ our resume, or the laugh could

CONTINUED FROM PAGE 21

my Rolodex file, including my insurance broker. He proceeded to sell me a \$500,000 life insurance policy, since I wouldn't be covered at work anymore.

3. Too many job sources. Save me money — don't send your resume to every employment agency listed in the Yellow Pages of the Boston, New York and Los Angeles phone books. I received ny two responses: one that wanted to now if I had ever considered a high-payng career as a masseur and the other a now-paying career selling ads in the Yel-now Pages.

w Pages.

4. Individualistic approach. To

separate myself from all the other techies out there and catch a prospective boss' eye, I wrote my resume in ismbic pentam-eter, expressing the "essence of me" and how my achievement of universal whole-ness could translate into more productive ness could transite into more productive programs. The only thing I caught was the uneasy feeling that Miss Menard, my ninth-grade English teacher, would get hold of a copy and return it to me covered

5. Full-time search. It pays to treat your job hunt as if it were your job. However, it is unwise to print business cards that read "THIS SPACE INTENTION-

ALLY LEFT BLANK" where your title normally go.

Too much interview prepara-tion. To present myself as knowledge-

able about the organization and its net-working communications product lines. I spent 26 straight hours memorizing IEEE numbers and their specifications as well as ISO, MAP and TCP/IP jargon. I fell assees in the firm's lobby while waiting for the secretary to escort me to the inter

 Slick interview technique. To create the best possible impression dur-ing an interview, I first enrolled in a Dale Carnegie course and transformed my rather scratchy tenor into a mellifluous baritone. Incredibly, the first organiza-

tion that interviewed me after said transformation offered me a job . . . as a recep-8. Expansive job search. Rath than setting criteria on company size and

9. Positive attitude. The typical answer to the question, "Why do you want to leave your current job?" might be, "My oss always takes credit for my ideas But this comment is construed as a "nega-tive attitude" by a prospective boss, since be intends to do the same thing. Deter-mined not to fall into that trap, I suppose I adopted a tad too positive approach with the reply. "I would like to give new people

location, I determined to consider any opening, regardless of the commute. But

Prudhoe Bay, Alaska, for instance.

me interviews just aren't worth the ef-rt — the one at Pipeline Systems Corp.,

10. Dapper appearance. Possibly the most neglected aspect of the entire job search is physical appearance. Even if you always wear the programmer's uni form of jeans and ripped T-shirt to work when interviewing, you should attempt to visually create that all-important first impression of competence; to state forceful-ly, without having to utter so much as a single word, that you can effortlessly code complex algorithms. Lamentably, my tux did not seem to obtain the desired resul

And that is the list of blunders I'm sumitted in search of the perfect job, So please, learn from my excesses and tem per your job-hunting enthusiasm with a dollop of common sense. Oh, I finally did land the right job - when I ran out of inders to commit

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Harrison

CONTINUED FROM PAGE 21

the industry. He was relying heavily or the read-after-write logic to handle the error that would result because of the splice in the tane

Hans typed the characters on the con-sole to restart. The tape drive wrote shout three blocks before it encountered and erased over the solice. The procurement software continued

to run and finished in less than a minute. Before leaving to go home, Hans started the off-line print routine to print the output listings, and Murry left a short written report for the MIS director. "That was a full day's work," he mumbled.

and creativity.

Never say die Murry and Hans had every right to call it quits when the operator's cossole typed the end-of-tape message. They knew

TDOS could not handle the problem. But calling it quits was not acceptable to either of them because their job was not finished, and they were committed to

Murry and Hans were not the type of people who give commitment easily. Their attitude was earned by manage-ment that understood the importance of people in getting the job done - particu-tarly when doing so required extra effort

Management that demonstrated a ense of farmess in pay policies, promotions and working conditions.

ement that delegated res bility and gave workers an opportunity to use their creative skills.

Management that was committed to helping people work through their prob-

ent that consistently de strated its own commitment to peop A little bit of commitment went a long

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SYSTEMS & SOFTWARE

TALK

Stanley Gibson

IBM as the gentle giant



non good. working with indepen In working with indepen-nt software vendors and users create its repository. IBM is ing something that many have en classioring for it to do. If e effort succeeds, it should out the CASE industry and,

correspondingly, the productivi-ty in applications development at major IBM accounts. isers asked for cross-sys-consistency, and they called

or a new, complete dictionary. In Systems Application Archi-ecture (SAA) and the planned tory, they are setting

ever, the repository ses a couple of intriguing

questions: 1) Will it be too late in getting to the users and 2) is DB2 clossible?
Let's look at the first question. Although BM says the repository will be announced this year, it probably won't ship this year. One independent software vestor that is working

Text retrieval finds its home

But relational DBMSs have trouble when it comes to free-form data

Equipment Corp. Vaxchuster to manage its engineering docu-ments. Sheldon Frick, database administrator at Albed-Bendin, says Info DB imports data from the Microsystems Engineering Corp. Mass-11 word processing software used by the firm and in-

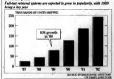
ANALYSIS BY AMY CORTESE

As Towers Perin, a mas consulting firm based in New York, grew from 20 offices in 1985 to 55 worldwide today, it became harder for the varie occame harder for the various offices to keep in touch with what the others were doing. A system was needed to make pro-posals and reports available to consultants, whether in New York or London.

Tork or London.
Similarly, Allied-Bendix Aerospace in Teterboro, N.J., wanted a system to track its engineering parts inventory for the firm's 560 engineers so that design ef-560 engineers so that design ef-forts could be built on rather than duplicated.

What these two firms have in

nmon is a need to manage Pivotal year



tes access the system from om Henco Software, Inc. in am, Mass., on a Digital ment Corp. Vaxcluster to

Both computers.

Both computers recall a limited number of products being
available only a few years ago
when they were evaluating options. Today, an increasing array
of text products are offered by
DBMS, word processing and offew automatics. fice automation vendors as well as traditional text retrieval pro-

Getting ground
Typically, a DBMS works with
data that is structured — kept in
well-defined data formats in
which different records in a fine
have the same definition, such as
name, address or december.

Unstructured, or free-form, data, on the other hand, can take many forms and is typically

lengthy.

A text management system
has the ability to search and retrieve any word or string of
words in a textual database.
Most of these systems work by
automatically creating an index
of words showing where they occur in a database. The user does
not need to know any reference
where such as a document name.

IBM hopes stay alive for 9370s

BY ROSEMARY HAMILTON

It has been six months since IBM made its second major push to promote the 9370, and the troumore than ever to be desti

has just recently made headway with the low-end 370 line in selected niche markets, it now also concedes that it made its share of mistakes with what was sup-posed to be a strategic midrange

u asked IBM executives Continued on page 3

the totally a

MAIL AND UPF-no procrommentum. Encl*TAGO in obytamic system that gives Electronic Mail and Ollice Automation to servyone — their novice to expent I can be hand on an individual basis to set the user's shil-lises and reseds. However, and the process of the service shill throwing. Expents have everything they need, And, it has been designed as a platform to support an emerging set of capabilistics as the evolution of office submettion continues.

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FISCHER





Recently, an information management revolution occurred at the University of Wisconsin-Steven Point Dan Goulet from the University and Jim Leonhart of AT&T—campus raticals of a different kind—explain how they were able to realize a bold and complex vision

FEBRUARY 22, 1989

Jim: I remember the first day we met. You had been around the block a few times, but weren't getting

the answers you needed.

Dan: We wanted to create a

unique education entronstarted a revolution flowing on-

flowing online computer campus. We bad a ON CAMPUS. vision, and we were looking for ON CAMPUS. someone to belp build it.

Jim: A distributed networked computing solution, that's what we'd call it now: a way to process, move and manage information effectively, throughout a widespread

organization.

Dan: We talked to many computer vendors before you. We got tired of describing what we needed, so we drew it. That graphic was about 13 feet long.

Jim: More like twenty. The chart showed every information resource on campus linked together, accessible to students, faculty, and administration. It became the wallpaper in my office for fifteen months.

Dan: It was like a blueprint for a data superbigbway.

Jim: We put our ISN wide-area network at the center—like an interchange—and built fiber and twistedpair data lanes to applications running on AT&T 3B2s, DEC, UNISYS and other hosts located in all the departments. We put on, and off-ramps in strategic locations: StarLAN networks that gave access to the highway from workstations.

Dan: We designed everything from the user perspective. The more technically remarkable the system became, the barder we worked to make it approachable.

make it approachable.

These men re

Jim: Easy for novices, powerful enough for programming students.

Dan: We developed a mentadriven user interface but is consistent and clear. Students and faculty can select applications like obecking speling, transmitting course grades, even brussing through the on-line card catdiago of 1.5 million books at the chievesity of Wisconsin-Madison. We wanted desktop power and access, but we wanted to process information where it made the most sense.

Jim: Thinking back, we realized early that the complexity of your vision precluded a single-system focus. You needed open systems.

Dan: You were really the only ones that understood this point. Open systems allow us to use off-the-shelf components; vendors bave to hid against each other to get our business. Open systems are the secret. Jim: It's mind-boggling how much computer power is out there. We wanted to harness it all, yet give a piece to every individual.

Dan: A truly distributed network, one we don't think we'll ever outgrow We've added 300 WGS workstations . in the last five months.

Jim: Dan, where in the world is that wallpaper today? Dan: We bad it bronzed. Today,

Dan: We bad it bronzed. Today, so many colleges and businesses really need a similar solution. That's probably wby we've bad so many visits from

Jim: Little did we know

back then, when we first met.

Dan: Ob, something tells

me wou had a hint

The Stevens Point Solution:

THE CHALLENGE:

Create a distributed computing revolu-

tion; link the campus into an integrated information resource open to every user. THE SOUTION

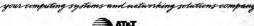
AT&T 3B2 computers support a multitude of UNIX* System V-based applications: AT&T StarLAN connects AT&T WGS computers, a variety of micros, and hoss together. The AT&T Information Systems Network (ISN) is every campus user's gateway to all computer resources.

THE RESULT:

Stevens Point has been designated a Center of Excellence for Distributed Academic Computing by the Board of Regents for the entire University of Wiscorsis system. The majority of the 9000 students on campus regularly use the network for coursework and homeworks. Faculty have integrated computing into 41% of their coursework.

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ing the Information Infrastructure," a conference red by the Information Industry Association, is about how aful companies of tomorrow will provide the integrated m—the whole pie—to their customer's information rement needs. IIA, the world's largest trade association of management words. List, the worgs surgest tride association of information companies, recognises that the information industry is an amalgamation of evolving industry segments forming a worldvide support structure—allowing for the creation, processing, packaging and delivery of information to end-users around the world.

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KEYNOTE ADORESS

Robert E. Allen, Chairman & CEO, AT&T who will discuss "Compatibility and Common Sense: Building Blocks for the Global

ners include speakers from each segment of the information industry.

Essenth Espel, President, Ziff Communications Company, will show how information providers can leverage the information infrastructure to gain competitive advantage.

Mitch Kaper, President, ON Technology, Inc., one of the innovators of Lotus 1-2-3, will share his inagints on the changing role of autware within the information infrastructure. Philip Guigley, President, Parific Rell Corporation, will focus on networks and their role in the delivery of information.

Michael J. Quinlan, IBM Vice President & Apri. General Manager, Personal Systems, IBM Corporation, will present successful techniques for marketing managers.

Regis McKenna, Precisiont, Regis McKenna, Inc. will discuss how the information infrastructure is driven and unified by marketing strategies

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The same

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New options for IP's



VMS users: Decwindows

yes, RDB no

BY AMY CORTESE

Digital Equipment Corp. is buit-ing the latest version of its VMS operating system with a runtime e not biting.

Wore appealing to users is the becwindows graphical interface, ithough recent interviews with DEC users indicate that it will be

DEC users indicate that it will be implemented slowly. VMS 5.1 contains significant enhancements — despite DEC's tradition of reserving major releases for even-numbered iterations. Pollowing last year's inclusion of symmetrical multi-processing in VMS 5.0, 5.1 will feature the Decwindows graphi-cal interface for use with DEC-

Further, a license for a run-time version of DEC's RDB is included at no extra cost. Cus-tomers will still need to order and pay for the cost of the actual media and documentation but will not have to pay for the RDB license, which typically costs tens of thousands of dollars.

Big attraction
A rustime version of RDB, while
not capable of developing applications, will be attractive to
many DEC subscores, said victoria Farrell, product marketing
manager of DECs Database
Systems Group. With it, thirdparty activates developers can
write applications that use RDB
purchase a production version.
As the first copies of VMS 5.1 lik the streets, customers confirmed that they had received
the license, but many nonether

he license, but many nonethe-ess indicated they would not be making use of RDB.

One VMS user, Ron Carron

High-tech. tradition in concert at Steinway

ONSITE

BY RICHARD PASTORE

the 1990s. A souring marketplace spurred Steinway's move to-ward computer technology, said Robert Birmingham, whose Wal-tham, Mass.-based Steinway Musical Properties, Inc. bought the company from CBS, Inc. in

"When the market starts to turn off a little, there's got to be a reason for it," Birmingham said. One such reason, be noted,

was inconsistency in quality, a symptom of an antiquated manu-

Birmingham's remedy has been to "add s little more sci-ence to the art of piano making." His continuing goal for Steinway.

now inderviewing vendors for as a laterly to the heart of the CIM appropriate numulacturing resource planning (MRP) II pactage. The group expects to have jit up and running by year's end.
"The MRP system will give up the their control of material Scienway is also applying NEW YORK — The handcrafted Steinway has been the world's piano standard for more than 100 years, according to pianists, music critics and industry exmusic critics and industry ex-perts. But reputation will not be enough to keep Steinway & Sons, founded here by German inmigrant Henry Engelhard Steinway in 1853, fine-tuned in the 1990s.

ember, said the HP 3000 will trly be the heart of the CIM ratem. "We prefer not to

is to harmoniously mesh today's computer-sided manufacturing and research and development techniques with the old-world methods that literally built the Stainway's Koonig orchestrates CIM effort

Statismany's Koosing ordastrials convenient Development the factory. Keening and I'lline is nin-bet to train and for Schemany, which have to coordinate the localisation of the statistical and the statistica methods that hierally built the company's reputation.

For this tricky task, he has tapped Duniel T. Koenig, s 21-year veteran of General Electric Co. and an author and lecturer on

computer-integrated manufac-turing (CIM).

Koenig, Steinway's director of manufacturing, initiated s 10-step CIM effort and, as the com-pany's self-proclaimed "chief cheerleader," has overseen the

e understand the actions."

Currently relegated to PCs

soon have a new midra studies may come from an un-usual source — the U.S. Navy. "They do some acoustical signa-ture analysis and have some newly declassified stuff that may be of use to us." Koesig said.

ld meets new ich high-tech methods for un-restanding what old-world arti-ms intrinsically produced is not. But the new blood at the empany has high regard for the ntury-old Steinway traditions at echo in the corners of the

text ects in the corners of the dusty, simplane hangur-like ex-panse of the factory. For example, the knowledge contained in 6,000 original piano design drawings — many daling back to the 19th century — are hack to the 19th century— are being pinnstakingly preserved with an HP Vectra 8088 CAD station. Draftmens are copying these diagrams into the CAD systems on that the originals, yet-lowed and brittle with age, can be displayed as historic artifacts. Koenig is taking steeps to pre-serve the living knowledge bases as well. With the retrierent of a mattern continuer.

whom are the last of two or three family generations to work at Steinway — the company risks losing lifetimes of accumulated expertise. To guard against this, Koesiig is looking into use of ex-pert systems to "debrief" these

Sybase claims security clearance Sybnse, located in Emery-ville, Calif., claimed that the Se-cure SQL Server gives govern-ment agencies, defense contrac-

BY MITCH BETTS

WASHINGTON, D.C.- Sy-ASSENCE TON, D.C.— Sys-see, Inc. ushered in a new era in computer security by announc-age earlier this month what is aid to be the first relational da-shase management system with coosts controls designed to meet overrment standards for multi-

major misestone is the evolution of trusted computer systems," and Stephen T. Walker, a for-mer Pentagon official known as the father of the National Com-puter Security Center (NCSC).

tors and financial institutions the ability to store data of multiple security classifications in a single database. Individual rows in data tables are given security labels, and users can gain access to only those rows that they are cleared to see, update or delete. The Secure SQL Server is designed to meet the NCSC's B1 and B2 levels of security, which require discretionary and man-datory access controls. However, the product has not yet been evaluated or certified by the

Sybase officials, asserting that their product closely tracks the current draft of the standard, said that as the standard evolves, Sybase will comply with the

In the past, the focus of security

because that provides more por-tability and more control over the data resource," said Larry Willets, a software analyst at IDC Washington, Inc., in Vienna,

Furthermore, having an off-the-shelf package will help users and contractors avoid the expen-sive hassle of building custom di-

sive handle of building custom disbases to meet accurity requirements, be asid.

"An great as the Sybase announcement is, the big deal is that we are seeing the birth of the third phase of relational technology: true control over the data resource." Willest said. The first two phases were the implementation of the relational data to model and onesine efforts to

Although Sybose is the first to market, Willets noted that Ora-cle Corp., Relational Technol-ogy, Inc., Informix Software, Inc. and AT&T are all develop-ing secure DBMS products for a highly competitive market.

ing secure DBMS products for a highly competitive market. Initially, the Secure SQL Server will be available on Digital Equipment Corp. VAX computers running Ultra:

Beth-testing of the B vention and begin by the end of this month, with commercial shipments expected in the second half of this year, Sylvase end. That of the sylvas is a second of the sylvas and the second of the sylvas and the s

IBM 9370s

CONTINUED PROM MGG 25 of the Strip district, the attent is no, "Clapte and." But were those concentrations, the procession and "But were those concentrations and "But were not." San Jose, Calif-based market research that IBM hash impeded 10,000 STRO workfawler in 1984. Between 30% and 40% were shapped in the U.S. Datespera stoffer. Clapter refuned to release shapework of the Strip district, and the strip district of clarify that work are the strip that of claims that "De the strip district of claims that the st

3.000 systems

Altogether, then, IBM has shipped about 13,000 9370s since its 1987 rollout, according to estimates. By contrast, about 30,000 Application System/400s shipped in the first four months of that product's life.

IBM's current position on its 9370 traws a painful contrast to its plans for the system two years ago. It was to have been M's big hit in the midrange arens, the LX killer, the vehicle to bring IBM's 370 world out of the glasshouses and to

Last week, Clague identified six key was in which IBM now sees the 9370

· A platform for Pick Systems' Pick operating system.

• A platform for IBM DPPX users, who had been using discontinued 8100 sys-

 A platform for users of MUMPS.
 A communications gateway for users · An applications-specific processor for elect vertical markets.

This is not the main IBM had dreamed of, but Clague insists that IBM has learned from its 9370 mistakes. The biggest error in judgment, be said, was identifying the distributed pro-cessing market as the key to the 9370's

"The facts are it wasn't able to be all things to distributed processing." he said.

big distributed opportunities and weren't successful because any distributed oppor-tunity takes a while to do. We learned that with the 8100 and Series/1. We just for-

what are also an Series 1. We just for-got our history."

When asked if damage had been done from the less prepared way in which the 9370 was kunched. Clague said, "In the short term it did alot of damage. I wish we short term it did a lot of damage. I wish we could do it over again. Puture releases will certainly be put under (the AS/400) mod-el. That market introduction strategy was pretty sound, and it enabled us to reshape our thinking."

Gibson

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Goal Systems International S. A. R. L. 460 arenas de Wagner-75017 Parts, France-Phone: (1)42 67 55 55-Teles: 641.064 CONTINUED FROM PAGE 25 sely with IBM on the rep

sessed it wouldn't ship until a year from two. Even when it does ship. IBM savs. .now. Even when it does ship, Ison says, it won't be in its final form.

Indeed, the downside is that both full-blows SAA and the repository will be taking place (to borrow a plarase that has become a perhaps overqued stiple in the IDMA Limits). "Seen the limit was the come of the limits of the

sing place (to borrow a pirane term me-become a perhaps overwelf stighe in the IRM exicon) "over time" — maybe IRM exicon)" to the IRM exicon of the What thould propel on the measu-time? Jun waiting for it doesn't get appli-cations written any faster. But does it make sense to implement another data make to the sense of the sense writing with IRM on the reportory are keeping bath option of the property or keeping bath option on open, just in case IRM robotic school high chapter of the last robotic s clopedias and repositories. Several plan to keep DEC's Common Data Dictionar (CDD) Plus on the front burner.

Many third parties are planning a re-pository strategy to unify multivendor ac counts, something neither IBM nor rival DEC can promise. Generally, the largest accounts have both IBM and non-IBM suipment, a potentially large custo use for these vendors.

Users may always gravitate toward DEC. Indeed, if IBM can be seen as having a fee in all this, it would be DEC, whose CDD Plus is considered more advanced than what IBM now offers. With the VAX architecture and the VMS operating system, DEC lias the single architects that IBM is trying to create with SAA

taxt inst is trying to create with SAA.

Now, let' a move to the second ques-tion, that of DB2 being closed. Why couldn't it be sidestepped for some othe non-IBM relational database manage-ment system using SQL that can run on MVS and work with the repository, which IBM says will have an open architecture.
This would be a virtual cloning of DB2.
However, IBM has strongly suggested that a strictly IBM SQL database system.

that a strictly user Code, destroke systems will be required.

If DB2 could be eliminated as a requirement, then a user could conceivably have a plug-compatible mainfrance, MVS, a non-BM SQL database monager, non-BM fourth-generation languages and CASE took working with the open-architecture BM repository. A near-to-intercure BM repository, A near-to-intercure BM repository, A near-to-intercure BM repository. tal closing would appear possible.

But, of course, this is what IBM would like to avoid — how, exactly, we'll have to

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Terminals offer multivendor view

BY ROBERT MORAN

HACKENSACK, N.J. — Corpo rations that must access infor-mation from both IBM and Diss tal Equipment Corp. systems may no longer need to keep an IBM 3270-type and DEC VT se-

Intelligent Information Sys-ms, Inc., located here, recently introduced a series of intelli-gent terminals that hold simultagent terminals that hold sensitia-neous sessions between the 3270 and DEC environments. The terminals, which connect directly to an IBM 3174 or IS-

ler, offer spit screens that allow users to work in both environts on the same terminal by ng a hot key. For the interim, this is a very nice solution — the only available nolution," said John Dunkle, vice-president at Work-

group Technologies in Hampton,

Users, however, must rekey information to move it from the IBM acreen into the DEC acreen IBM screen into the DEC screen or from the DEC side into the IBM portion. Within three years, IBM OS/2 workstation users will be able to dynamically cut and paste such information from one environment to the other, Dun-kle said. He added that OS/2.

which today supports non-current sessions, will be extr ed to 32 concurrent sessions. The new terminals — the IS 391D/V, IS 3192D/V, IS 391D/V. IS 3192D/V, IS 392C/V and IS 392F/V — range from \$1,445 to \$2,475 and are available now. In addition, users of the company's four older models can upgrade to the series with a single board that costs \$450.

DB2 editor ups speed, support

BY ROBERT MORAN

FORT LEE, N.J. — On-Line Software International, Inc. pro-vided support for Version 2.1 of IBM's DB2 and a 10% access-BM's DB2 and a 10% access-peed improvement for DB2 ta-les with the latest release earsi-r this month of its Proedit steractive DB2 table editor. With Version 3.2 of Proedit, thich works under IBM's ISPF

which works under IBM2 ISFP tileprocessing monitor, a pro-grammer creating a database in DBS Versino 2.1 can copy a table description, and Proceft will automatically copy over existing referrestal integrity definitions. The version saves users work, said Colin Which an inde-position consultant and editor of procedit user would find it amory-ing to carry across the defini-tions, he said. "Without refer-ential integrity, a user creating a

tions," be said. "Without refer-ential integrity, a user creating a copy of a table would have to up-date the table manually." White added that Proedit's support for the latest version of DB2 and referential integrity leaves other vendors playing catch-up to modernize their

Despite the merits of Proedit, White said that On-Line will have trouble gaining acceptance with organizations that prefer "com-plete solutions" of DB2 tool sets om large vendors. With the table editor, an ap-

plications programmer can ac-cess DB2 data without leaving ISPF. With IBM's DBedit, for ISPF. With IBMⁿ DBedit, for cotmple, a programmer would have to copy SQL code out of the program, easi ISPF, easer another IBM withy to test the code and then return to ISPF to make changes to the programs, said Joe Otynick, On-Line's viceenident of database product

development.

One beta-test site user laud-ed the product because it al-lowed him "to get directly into DB2 tables."

DB2 tables."

On-Line said Proofit runs in more than 10% of U.S. DB2 sites and is available at a one-time E-cense fee of \$18,500 per CPU.

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what their machines see into usable information

With computer systems from Prin We give Robotic Vision's laser techs ogy the capacity to record informatio on a powerful CAD/CAM (Comput Aided Design/Computer-Aided Mar facturing) database. This information is use

DEC's VMS FROM PAGE 29

at Technicon Corp. in Tarry-town, N.Y., said be will be put-ting VMS 5.1 up in the next few eks but will not use RDB.

According to some analysts, DEC's long-term plans are to tie RDB more closely into the VMS operating system, similar to the

Application System/400's inte-grated relational DBMS and operating system.

However, Farrell said it is un-likely that DEC will bundle a de-velopment version of RDB with future versions of VMS. Although the packaging of an RDB license will not be signifi-cant in the short term, Robert Therrien, an analyst at Paine Webber, Inc. in New York, sava

it will be viewed as a strategic move over time. Therrien likened DEL s on to IBM's in 1985, when it

d it as a stra ng the product DB2 rapidly go catching

guard, Therrien recalled. He noted DEC agreements with rs such as Reird-party vendors such as Re-ional Technology, Inc., Cul-et Software, Inc. and Ashton

indicated they wou ows within six months, sev d not even moved to 5.0 vet

and are still at VMS 4.7. The leap to Decwindows will be a

leap to Decinindows will be a two-step process, requiring cus-tomers to first move to 5.0 and then to 5.1. But according to us-ers and naulysts, this should not pose much of a problem. According to Andrew Kenah at DEC'a VMS product market-ning group, any application run-ning no VMS 5.0 will run on 5.1 without of the control of the con-trol
Text retrieval FROM PACE 25

al vendors are making exten-is to SQL or their proprietary

ing system — Text Retriev stem — this past fall, ai imputer Corp. of America, n-SQL-based DBMS vendor a offered Text/204 for a few area now. Oracle Corp., Rela nal Technology, Inc., and In-mix Software, Inc., are also g on or have intr

ors. D est Corp., al has relationships with text ven-dors such as Henco, has laid out its Compound Document Archi-tecture, which is its foundation

text-hos in its anticipat

for next year — will incorporate SQL as a back end to access in-formation from SQL-based data-bases. The first will be DEC's

Allied-Bendix's Frick, who uses Oracle as well as Info DB, says each has its own strengths. With Info DB, Frick says that on age, end users need only r hours instruction and a uni, and away they go." One

sion a multimedia datal for now, most systems re-uire that an image or other ee-form nontext data be relatent or entered with ription tag so it can be ed on that. Just as SQL me a star



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Interactive Software Services Interactive Software Serv Suite 306 4825 N. Scott St. Schiller Park, Ill. 60176 800-288-8550

Suntex National Corp. has announced The Venture Analyst, an add-on product for users of SCO Professional, The Santa Cruz Operation's integrated spreadsheet,

graphics and database package.

The product runs in the Xenix/Unix operating environment and reportedly evaluates existing business and new opportunities in manufacturing, commercial real estate and service industries. The product can be used to prepare business plans, buy or sell businesses, forecast op-erations and develop budgets. It is priced

Suntex National P.O. Box 772868 Houston, Texas 77215 713-783-9059

Epic Data, Inc. has announced a data collection software package designed to op-erate on any Digital Equipment Corp. computer running under VMS, the com-

pany said.

The VMS Controller Software program reportedly allows any VAX user to incorporate data collection functions into their systems without the use of special hardware.

Features reportedly include terminal olling, redundant operation at the party-ne level, sequencing and data packing. A typical configuration costs approximately \$10,000

Epic Data 7280 River Road Richmond, B.C., Canada V6X 1X5 604-273-9146

Computer Horizons Corp. has announced the Trust-1 Bank software system for trust and custody applications.

The IBM mainframe software in

ram reportedly runs in the MVS operaton for a range of customized personal dation for a range of customized personal trust, mainter trust and custody services, the vendor said. The software program can also be purchased as an off-the-shed product. It is priced on a customer pro-posal basis, depending on individual re-currements and configurations. Computer Horizona 7.47 Third Ave. 1364 Floor New York, N.Y. 10017 212-371-8000

enhanced version of its Classic Human Resource Management System software for IBM management

Resource Management System software for IBM mainframes. The software has reportedly been up-graded to include data security features, help facilities and native CICS on-line access to payroll and personnel functions throughout the system. Release 11.0 is priced from \$50,000 to \$150,000, depending on configuration. Information Science 95 Chestnut Ridge Road Montvale, N.J. 07645

201-391-1600 Unipress Software, Inc. has introduced a version of Santa Crux Operation's Lyrix 5.0.4 word processing system for Sun Microsystems, Inc. Sun-3 workstations.

The colverse region with the similar to the second
ACBA, Inc. has released three Clas

mufacturing Software packages for

Manufacturing Software packages for Uniter-based systems. Currently running on NCR Corp.'s. Cover Series and Motorcia, Inc. Goldon, Tower Series and Motorcia, Inc. Goldon, inc. Standard Sorting, Classic Standard Product Corting and Classic Labor Per-formance—Sort part of the company's integrated 19-psckage manufacturing re-source planning systems. They are particularly suited for discrete, repetitive manufacturing re-ferences and produced to the control of the con-trol of the control of the control of the control of the con-trol of the control of the control of the control of the con-trol of the control of the control of the con-trol of the control of the control of the control of the con-trol of the control of the control of the control of the con-trol of the control of the control of the control of the control of the con-trol of the control of ufacturing operations and job shops, the vendor said.

Pricing ranges from \$1,000 to \$6,000 per package, depending on hardware plat-form.

form. MCBA 425 W. Broadway Glendale, Calif. 91 204 818-242-9600

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PCs & WORKSTATIONS



Douglas Barney

Nothing like



MCA — but none of its clones The self-appointed industry know-it-alls who still make fun of MCA because it has shown no MCA because it has shown no advantages over the AT bus are exactly right. No mealy-mouthed IBM sales hype will change this sad fact, either. But this lack of substance is hurting the clones — not sales of the

od reason to dig into the

ge market forces that give

People will happily buy IBM schines that don't accept old ards and don't seem to do anything extraordinary, simply be-cause they believe in the prom-ise. "Someday, the Micro Channel will be exploited, and I'll be ready," these customers

ns.
Based on reported board deopments, these customers
re not hornswoggled.

Continued on page 47

Measuring the value of PCs

Research finds a high return on investment, but the bayoff takes time

BY MICHAEL ALEXANDER The navback for comp

focus on using personal computers as a strategic resource can be as high as 10 times the original investment, according to a re-

KPMG Peat Marwick Con sulting Group and its research branch, Nolan Norton Research Institute concluded in a joint study that the return on investment (ROI) in PCs can be sub ntial if end-user computing is linked to corporate strategy and not merely used to au

Jan Duffy, a partner st KPMG Peat Marwick's information technology practice and "With technology practice, said, "With planned strategy and effective agement companies can expect to improve the bottom line by as much as 10 times its fenduser computing] investment. In this way, they can expect to utithis way, they can expect to un-lize technology to improve pro-ductivity and gain competitive advantage, fueling growth and higher profits."

"The 10-times return on in-restment" seems high to me, though the potential is certainly there," said Bruce Ferland, sethere," said Bruce Ferland, se-nior vice-president and informa-tion systems division manager at the Boston Safe Deposit and Trust Co. in Boston. "If you are replacing manual processes with, say, a PC manning Lotus! 1— 2-3 or something like that, you could probably incur a 10-times

nizations measure their success in end-user computing in terms of penetration level and benefits ulting from automating busi-

cused on task automation, which only produces bubble-up bene-PC payback

staffer, product developmer time and percentage of custome problems resolved in one tele chone call, Duffy said.

Though end-user computing "Most PC technology is fo- has a significant presence in many companies — with an overall penetration rate of 20%

cling insentments in less than three years DESCRIPTION SECTIONS

for return on 3-5 years 1-3 years Less than 1 year

Most of the organi

end-user compa

37%

40% SOURCE KING PLAY MARVE

fits," Duffy said. Corporations seidom reap the benefits in time savings or increased efficiency that come from automation. In-stead, these benefits "rise like bubbles, burst and then disap-pear," she added. "Companies can expect measurable improve-ments in individual productivity,

t this narrow focus was ampt e ROI to only 20%."
The real value of end-user imputing is when it is used to ake improvements that can be easured in such ways as inven-

- few firms realize the strategic importance of the information flowing within their organiza-tions, researchers said. "While they have made considerable in-

27%

vestments in computer technology, they are not taking advan-tage of the technology," Duffy Most organizations expect to achieve an ROI within the first 12 months of implementation, with the longest time frame for return being five years. "We look at a return on in-

Firm brings a PC touch to lost data

ONSITE BY WILLIAM BRANDEL

NEW YORK — Supporting us-ers in a competitive business is one thing. But when you add in

ers in a competitive business in con-ting the wife you and in-lies to the control of the con-bine of the control of the con-bine of the control comput-tation of the control comput-tation of the control comput-tation of the control of the con-trol of the con-trol of the control of the con-trol of the control of the con-trol of the con-t

group. "When we try to violate that personal aspect with sys tems that are centralized, user tems that are centralized, uners tend to step back and say, We Continued on page 44

Microrim maps out plans for Atlas II. Page 39.
 Harris' Aerospace divisio puts new project manage-ment tool to work. Page 39.
 Xeron targets electronic forms market. Page 42.

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Company (1) which has first humanian trans. Become in the later



Iulie Pitta

Apple bides its time on RISC move



At the recent introduction of the Mac IICX — Apple a latest Motorola 68030-based Mac ulley said Apple is in no hurry to iump into the reduced in struction set computing (RISC)

The Mac is not depen on speed," he maintained. "The race for speed is going on large-ly in the technical workstations market. We are a personal comnuting company

Something up its sleeve However, Sculley confirmed that there are "several" RISC ects within the company

Which RISC processor Apple will choose has been a topic of much debate. The rumor has it that hey've evaluated everything rom [Sun Microsystems']

arc to Integraph's Clipper," one industry watcher says.

Longtime Apple vendor Mo croia was the early favorite to supply a RISC processor for the Mac. However, Motorola's 88000 has apparently fallen out of favor with Apple evaluators, of ERVOY WILL Appet evaluation a, who have judged it too slow. Also, the original design team for the 88000 left Motorola to form Ross Technologies, which was recently purchased by Cy-press Semiconductor to lead Cy-press' RISC efforts. Cypress ensed Sun's Scale

ssor Architecture (Sparc). Mips Computer Systems, the choice of Apole's strategic partner DEC, appears to have grabbed Apple's attention. The Mips processor is believed by many to be speedier than the

88000 and Sparc.
David Burdick, a vice-president at market research firm Dataquest, Inc. in San Jose, Calif., dicts that Apple will outline its RISC strategy before year's end. If so, the announcement will be several months after introctions from Apollo, DEC and Data General, not to mention a year after Sun's first Sparc introduction. It is likely to take a couple of years before software rted to the new platform. lowever, as does Sculley,

Microrim's DBMS treads common ground

ANALYSIS

BY PATRICK WAURZYNIAK

Microrim, Inc.'s plans to breach out into the workstation, mini-computer and mainframe DBMS markets with a common product has hit home with some personal

as Atlas II, will appear as a roul tiuser database management system under OS/2 later this year. The back-end engine will also be ported to key mini and frame architectures as part

through the early 1990s.

Meanwhile, users of Micro rim's R:Base personal compu database program seem to be leaning toward migrating their DOS-based PC applications to Atlas when the relational DBMS bows under OS/2. The move to

more powerful architectures is set for 1990 or 1991. s, which adheres to the ANSI Level 2 version of SQL, will reportedly also include ex tensions to IBM's DB2 System Application Architecture (SAA) Atlas is expected to use the client-server architecture and to be highly portable across other architectures by using essential-ly the same graphics and data-base kernel in each environ-

nounce its plans to introduce a DBMS solution for enterprisewide data sharing following dis-

BY SALLY CUSACK

MELBOURNE, Fla. - Harris

ery U.S. space program since the days of Telstar. This includes the Apollo, Mercury and Gemini programs as well as the ongoing

shuttle missions. Specializing in custom air-

craft, spaceborne communica-tions and information systems the Melbourne-based division

technology in a high-security en-vironment: Clear communica-

tion between project team mem-

bern and strict adherence to scheduling and project planning

activities are crucial.

Several division managers at

using a personal computer-based

mission-critical

sion has played a part in ev-

Corp.'s Government Aerosp

Aerospace firm test-fires

time-planning software

formation executives, President David F. Hull said. The execu-tives said that current DBMS

tives sind that current plants software that is designed to support enterprisewide data sharing in too difficult to learn and performs too slowly for PC users, Hull raid.
"We'll be very interested in looking at it closer," said Raigh

npson, director of telecom-nications at McKesson Corp. San Francisco. "It looks like m sun Francisco. "It tooks like they're headed in the right direc-tion, particularly in regard to their ability to access informa-tion on a host, a local-area net-work or on an individual work-

station."
Although McKesson currentby has only experimental applications of R-Base running on IBM
Personal System/2s, Sempson
said the firm's strategies for future
uses at McKesson, which is a
heavy user of IBM mainframes
and FS/2s.

Not where, but how Sampson, whose group uses R:Base V for inventory management of computers and network components, added, "I really don't care where the infor

resides; just let me get to it with a few keystrokes. I don't want to a few keystrokes. I don't want to have to be a guru to do that." Barbara Hunt, supervisor of a database management group do-ing research and development at Anaheim, Calif.-based Fujitsu Business Communication Sysns, said her R&D operation rs, R:Base under MS-DOS and

based Chronos Software, Inc. to optimize self-management and

Harris for 13 years and curren

Harris for 1.3 years and currently serves as an engineering manag-er. Approximately six months ago, be began looking for a proj-ect management package for his IBM Personal Computer AT-

npatible system. "Originally, I got hooked on a

shareware program a fellow brought in," Green says. "I liked it so much I spoke with an admin-

istrator in the section about get-

ting my own legal copy of the product. When that proved im-possible, be started looking into

imize self-management and partmental productivity. Howard Green has been with

posed Unix-based versions of At-las on workstations or Digital Equipment Copt. VAX systems. "We've been trying to base some decisions on what to go to for the next few years," said Hast, whose group's Intel Corp.

ICRORIM DECIDED to announce plans for a DBMS solution to enterprisewide data sharing after discussions with 300 information executives,

80286-based PCs currently lack the Unix-type multitasking capa-bilities that she prefers. "We want to stay with R:Base and use the systems we have in place. If Microrim is going to have a data-base running under the Unix operating system, we want to stay

Hull said

finally decided on Who-What-When from Chronos because it did not seem too complex or

The package focuses on three interrelated aspects: peo-ple, project and time manage-ment. Restures include a daily calendar page, project manage ment displays with milestons and deadline markers and auto agement reporting

Every morning, Green runs a copy of his personal calendar and hands it to his secretary, "I tell her, This is what I think I'm dong today," and she tells me if I'm right," he said. "The necessary modifications are made, and I don't worry about remembering — or more importantly —prior-itizing my schedule. I can look at what has to be done and assign times and dates to priority pro-

Green said that the package to comes in handy when he and associates want to review and Test pettern
The division evaluated several packages, including Persoft, inc.'s IZE, Micro Logic Corp.'s Tornado and Agenda from Lotus Development Corp. The section modify project plans as they appeur on the computer screen. Dates can be established for projects and checked immediate-

ance company, consultant Line Nelson plans to implement

ance company, consultant Linda Nelson plants to implement Alass when it comes out for IBM Application System 4400 machines, action System 4400 machines, and all of the company's applications are on eight Novell, Inc. servers connected to about 120. PCs on a LAN. PCs on LAN. PCs on LAN. Inc. "Selection servers connected to about 120 migratuhle to Alias." Nelson said, noting that the does not want to rewrite applications for Alias Dat works to keep that the contract will be selected to the property of the p

Atias on the PCs even if the com-pany moves to AS/400s.

Karen Offermann, an analyst at research firm Dutapro in Del-ran, N.J., said, "I don't think At-las will be sold on the benefits of user interface, but the user in-terface is part of the picture. It's a good strategy for others to rep-

At Framingham, Mass.-based market research firm Interna-tional Data Corp., PC software

tional Data Corp., PC software program manager Nancy McSharry estimated Microsim holds about SNo of the PC database market with 250,000 to 300,000 R-Base copies installed. "I think it's a very smart move on Microsim's part." McSharry said. "They've always been a good, strong cortypany in the PC market, but the company in the PC market is the program of the PC market in the PC m is just seeing the way the wor going and is making the adju-ments. If the products are imp mented as they say they will, evything looks good on paper.

easily made, and hard copies of the plan can quickly be distribut-

The software package incor-porates Ganti charts that re-portedly soom from overview to daily view modes, and a weekly overview displays daily time bars that indicate both free and com-

According to the vendor, the user can arrange group meetings simply by indicating the persons involved. The program will auto-matically flag any scheduling

efficts on screen. The managers at Harris are iting for networking function waiting for networking functions to be completed to get the soft-ware system going full speed. Green said the program is very easy to learn, though be feels that the documentation could be more specific.

The program requires as IBM PC XT, AT, Personal Sys tem/2 or computible runni MS-DOS 2.1 or later and a ma m of 512K bytes of ram access memory. A hard disk is recommended but not required. Who-What-When is not copy-



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Xerox unit goes for forms-processing window

BY SALLY CUSACK

SAN DIEGO - Forms curre ly make up 33% of all burn focuments; and electr forms-publishing sales in the U.S. could approach the \$3 bil-lion mark, according to market

In anticipation of the predictrox Corp.'s Desktop Software siness Unit last week aned forms-processing so ware designed to run in the Mi-

sonal Computer ATs and compa-tibles as well as Intel Corp 80386-based mach Operating under Window

the product reportedly employs a mouse-driven graphical user oe that integrates ns-drawing package and a re-

The program accepts data text and graphics, includi text and grapues, including scanned images and logos. The user defines the database by simply drawing the form, Coles said. anty. The software is targeted at ding that its capa the average PC-literate pers the package ideal for profession who wants to create customized forms and databases without programming, according to Ar-thur E. Coles, Xerox vice-presials in the forms-manufacturing design and graphics arts ind

Generated forms can be modi

fied even during data entry, the company said, and data is orga-nized by the software. The user reportedly does not need to em-ploy data or screen definitions or report generation languages. Different forms and related data can be linked or cut and paste together.

The software also repo lows users to perform relation al database functions and import and export data with PC prod-ucts such as Microsoft's Excel, Lotus Development Corp.'s 1-2-3 and Ashton-Tate Corn 's Features reportedly include a

built-in word processor, searchand-sort and mail-merge. A variety of fonts, sizes and colors and other graphical elements are Currently in beta testing, Formbase is scheduled to ship in June and costs \$495, according

Pitta FROM PAGE 39

Burdick thinks Apple can afford to ignore the hype surrounding RISC machines.

SC machines.
"I don't think the RISC hype has reached Apple's market," he explains. "It's the performance-sensitive applications — the technical applications — that are the early adopters of a new com-

puting technology."

Much has been made of con verging courses set by Apple and Sun — two stars of the Silicon Valley. Is Apple's failure to move to RISC, with Sun being an early opter, going to hurt Apple? No, according to Burdick. "I

think there's more of a case th Apple's cutting into Sun's mar-let rather than the other way around," he says. While Apple has made nome inroads with en-gineers, Sun has failed to capture the interest of personal comer users. It is expected to make another stab at them with Open ok, a graphical user interface sed on Xerox's Star, which as "borrowed" for the Mac. Sculley displays Apple's u

avado when discussing his empetitors. "We are not in a eed race with anyone," he id. "Nor do we feel any great pressure to compete in any ar other than those that have b our strength.

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installation 365 days a year. That's just the beginning There's a lot more to tell For further facts about the benefits of optical storage using the DW 34800 OSS, call Gary Holtwick at

Pitta is Computerso eld's West Coas WITH SO MANY DIFFERENT OPERATING SYSTEMS TO CHOOSE FROM, WHERE DO YOU DRAW THE LINE?













PC touch

CONTINUED FROM PAGE 37

At McGraw-Hill, the brokers in the ading group rely on a systems-integrat-lapplication area called analytics, which are many the systems of the systems of the systems of the area of the systems of the can be used to display and report financial data to a broker or perform complex in-teractive statistical presentations. Wall Street brokers base million-dollar deci-

mons on those, Solomon said.

Analytics are integrated software applications that merge spreadsheets, realtime data feeds and mainframe database access into one graphic presentation on the user's screen. Analytics ensemble Mainframe Muscle

of data that they choose as integral mar-ket factors, which are then packaged into a meaningful form on their personal com-

ster screens. But traders do not just want inf traces on not pust want morma-tion; they also want to control it. "In busi-ness, we tend to ignore the fact that there is that personal relationship between the user and the machine," Solomon said. ted. you can't have all your data on a PC. Some of it has to be on the main-frame, but the user wants that PC inter-

on without appearing to the user as

ce as the front end. He wants that PC see one tront can, he wants that PC environment."

So Solomon's group is also trying to change its standard user interface to a PC interface. At issue is whether the group can give the interface a procedure-based

a mainframe interface.

Solomon said that his group is now moving toward a less procedural approach that will blend the best of the traditional Lotus Development Corp. 1-2-3ditional Lotus Development Corp. 1-2-3-style interface with newer graphical technologies such as pull-down menus, mouse support and dialog boxes. This, Solomon said, will give users the feeling that they are liberated from the main-frame but are still masters of their data.

Similar approach
"The interface we're using does not imi-tate the mainframe but provides a lot of the same procedural approaches," Solo-mon said. Instead of being ions- or object-based, the broker's interface is made up of menus and forms

"We've found that they are used to an environment that is very procedural. Think about when people want to do anal-ysis," Solomon said. "When you're on the inframe, everything by nature is pro-lural. You have to do X before Y in terms of your interaction with the main-frame session. What PCs allow you to do is change that order, get away from the pro-

He cites the example of a user who He cites the example of a user who may want to write a report but decides to create a graph first. But before he creates the graph, he wants more data analysis. "That freedom can only be attained with PCs. Mainframes tend to force you into a certain task instead of performing it for

e user," Solomon said.
"When you consider the data-intensity of finance, you can see why the operating system of Wall Street is Lotus 1-2-3, not DOS," be said. "Our information is not

textual; it is numbers and graphs, which is very typical of the financial industry." "It's funny how we as an industry have "It's funny how we as an industry have come full circle in systems integration." Solomon said. "Ten years ago, we were talking about time-sharing muchines for decision-support applications. Now. we have these same decision-support appli-cations, but now they are PC-based."

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A minor change
The issues of decision-support applications that help decision makers with anxlytics are still the same as interactive computing on the mainframe. "All that's changed is the interface. It's a PC," Solo-

mon said.
"We can't force major changes in desttop technologies on our traders for our
own purposes," he said. "As a result, we
lag the market in gee-whit technology.
We're lucky if we can get people to
chatge their peripherals. But we can't
change their PC or the way they use it. So our standards are wrapped around the ex-isting technology."

isting technology.

Solomon is now concentrating his technological efforts on storage, netmedian and averems integration. "This is working and systems integration."
so important for us as an application. ented group, as we can't build all our own be said. "Anywhere I can go out and find existing technology that geout an init century textury text ge-nerically does the job and can then be adapted to our capabilities, I'll do it."

Because of the constant user demand for data, Solomon said McGraw Hill is in-

vestigating write-once read-many (WORM) - technology, WORM drives would allow users to access and store a larger cache of data on their PC. Large non-volatile storage, such as on Steve Jobs' Next, Inc. machine, is the right direction for data-intensive personal computing for financial users, Solomon said.
"We have to combine local storage
with communications," he said, adding
that after experimenting with CD-ROM

that after experimenting with LU-RUM technology, be is now more enthusiastic about WORM technology. "It's an issue of press time— a pure publishing issue," Solomon said, noting that in the high-fi-nance industry, information must be re-ported and distributed daily, or it is irrele-"Pinancial data has a very limited she

life," be said. "If it takes me a day to turn around the mastering, two days to finish up production, and three days to ship, the data is a week old by the time it's out there. It's not news anymore. With WORM technology, I can be down! ates every day and directly press se onto the existing CD technology.

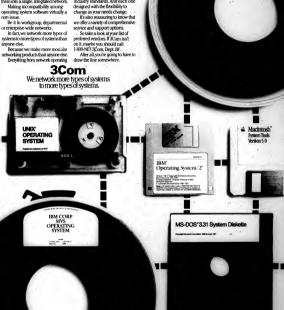


At 3Com, we can take computers running any or all of the operating systems on this page and combine them into a single, integrated network. Making incompatibility among

non-issue. Be it in workgroup, departmental or enterprise-wide networks.

systems to more types of systems than anvone else.

systems to adapter boards to mainframe connections. Each one built upon a platform of leading industry standards. And each one





A STATE OF THE STA





Barney

CONTINUED FROM PAGE 37 MCA is an architecture for the future. That is precisely why it is too early to clone. The really wild stuff, such as busmastering cards that include the supermastering cares that include the super-computer-like 1860 Intel processor, will come and will flabbergast customers. But will clones be compatible with things that have not been released? Probably, al-

ough customers burned by early es of the personal computer have that Once a shipked of the advanced cards time out, the clones will be thoroughly

tested. If they are compatible, people will buy lots of them. If not, we'll find

Value of PCs CONTINUED FROM PAGE 37

estment on a time horizon of about five ears," Ferland said. "The break-even oint is most probably within one to two

There is some debate about separating There is some debate about separating the ROI for software from that of hard-ware and also whether the length of the time for ROI on software should be shorter or longer than it is for hardware. Duffy said. The expected ROI time should not necessarily be fixed. Much will dend on whether the computing solution is designed to satisfy a one-time crisis or whether the investment is designed to supplement the investment is designed to supplement the overall strategic corpo-rate business plan, in which case the ROI should be built into the plan and not be specifically related to technology acquisi-

It is not uncommon for organ to expect that staff reductions will follow the installation of a new computer system, particularly when the investment is significant. But few companies carry through with staff reductions or even chart the use of PC technology after it has en out into use

The management in most companies is not fully appreciative of information technology and is unaware of how to best manage its use, said Don Weidman, manager of end-user support services at Long Is-land Lighting in Hicksville, N.Y.: "We have had people justify PC budgets by say-ing they will need fewer people, but they are not doing away with jobs because of

are not soing away was how seemed technology.

Nolan Norton based its research on the existance of four distinct evolutionary phases of end-user computing. The following phases, according to the researchers, reflect the degree to which an organization has integrated its technological and

sation has integrated its technological and strategic business goals: • Technical proficiency — when a compa-ny's early adopters of PCs become profi-cient at using them, although without ap-narrent benefits. parent benefits.

Task automation — when investments

in technology are made with the intent of improving productivity. The ROI is 10% Process automation — in which the company begins to network PCs and auto-mate many processes. The benefits are three times the ROI.

Business transformation — a stage when deaktop computing has fully pene-trated the business. It is at this level that the greatest benefit — 10 times the end-

them at Silicon Valley yard sales, real

Lotus/DBMS lives. Many expected that the long-awaited Lotus/DBMS (you remember this, don't you?) would be re-leased in one big batch that would include the back-end server and an array of Presentation Manager-based front-end tools

instead, soon after Lotus' 1-2-3 Release 3.0 is available this summer, Lotus will ship its communications specifica-tion, dubbed Blueprint, and its proprietary and already copywritten develop-ment linguage, Lotus Extended Application Facility (LEAF).

This is the start of the Louring MMS. n. Users will be able to tap into the

Lotus engine using Release 3.0 and Blueprint and develop more custom appli-cations using LEAF, Later, the graphical apprendishert 1-2-3/G and the graphical

querying, reporting and forms tools will follow. For those wary of Release 3.0, to-day's Release 2.01 and follow-on products will eventually tie into Lotus' overall

ucts will eventually tie into Lotus' overal database strategy by accessing Blue-print, officials pledged. In another disclosure, Lotus said that starting with the shipment of 1-2-3 Re-lease 3.0, all key Lotus products will begin to ship in three separate versions, ining network server, node and stand-

EISA come, EISA go, Part 2? Acconting to a source fo

cently finished Extended Industry Sta dard Architecture bus connector, the system cannot handle the 100-MHz h

peeds its vendors claim it can. EISA sys-ems reportedly cannot really hit speeds evond 16 and 20 MHz, which today

eyons to saw as easier to get much beyond that, and you are sking the system to fail, the source said. Fortunately, they still have a few Fortunately, they still have a tew months to work out the problem, so the engineers best get cranking. But with talent like Gary Stimac involved — father of the Compag 386 — the bas should be on course for its year-end destination. Then all they'll need is board support.

erner is a Computerworld senior editor, PCs and



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NEW PPODUCTS

Software applications packages

A software system designed for the engineering and manufactur-ing industries has been introed by Systech Corp.

The Systech Product Definition System was developed to improve the production and distion process by providing the means to gather parts-list data and integrate it with other information, the vendor said. The software runs on IBM Personal Computer ATs, Intel

Corp. 80386-based machines and compatibles under MS-DOS A single-user version is priced from \$2,999. Systech 61 Scott St

Dix Hills, N.Y. 11746 516-595-2885

tion-quality graphics, the vendor said. The latest version reports A statistical process control program for DOS-based personal computers is now available from

ety of industries and combines analysis functions with presentaedly features color windows and custom configuration canabili-

Called Custom/QC 3.0. the

program meets the quality as-

surance requirements of a vari-

Custom/QC 3.0 has a price Dynamic Software has released

tag of \$500, which includes all ties, a full-screen text edi histogram and descriptive statis tics and 13 control charts. A hard disk and 640K bytes of randomaccess memory are required, the company said.

14 N. College St. Schenectady, N.Y. 12305 800-426-4014

ersion 2 of the OPH Purchasing Management System. The modular software system was de signed for the manufacturing purchasing environment and serves as a decision support tool for buyers and managers, the vendor said. The product incorporates a relational database The QPII software system re

res an IBM Personal Computer, Personal System/2 or compatible, 640K bytes of rando ess memory and a hard disk A single-user version costs \$995; the network version costs \$2 985

Dynamic Software 109 S. Main St. 802-877-1122

Macintash products

Data Translation Services has announced Colorkit, a software product that works in conjunction with the company's Quick-capture frame grabber board for Apple Computer, Inc.'s Macintosh II computer

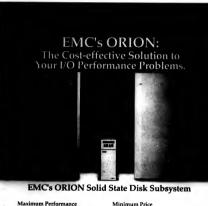
The vendor said Colorkit permits the 256-gray-level board to capture 24-bit color images from red-green-blue video cameras and still-video devices. The products were designed for use in electronic publishing, color compositions, computer art and slide-making applications. Color-kit costs \$295 Data Translation 100 Locke Drive Marlboro, Mass. 01752

508-481-3700 A software development tool for Apple Computer, Inc. Macintosh users has been introduced by

Abragas Software, Inc. Called Codecheck, the product was designed for C program-mers and reportedly analyzes the code for portability, main-tainability and style. The software utilizes expert system techniques for rule-based source-code analysis, according to the vendor.

Codecheck supports all C compilers from major ven and requires a minimum of 512K bytes of memory. It is priced at \$295, and discounts are avail-able for multiple copies or educational purchases. Abraxas Softw

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NETWORKING



LANs meet Mr. Fix-It.

ry of activity mong the top wo local-area setworking urned up the thinks on service and connect

3Com recently announced a ajor service agreement with Hewlett-Packard as part of a oint product development and rketing effort that also nets HP a 5% equity position in 3Com. Novell responded with support arrangements for four or service providers, includ ing HP, as well as software-li sing agreements with an assortment of systems and

Numerous customer-driven forces are pushing many ven-dors to seek cooperative agre ments with these and other LAN

software vendors.

his series of events is clear: LANs have gained acceptance

ce opportunities
cas for collising outside support sides that the greatest
micalians and LANs

17% 16% 18%

Net encounters snags Bellcore prototype gains interest, not progress

MIDDLETOWN TOWNSHIP. N.J. — Hoping to help its own-ers, the regional carriers, effectively deliver multimedia networking services to user work-Belicore has been working on a network prototype that is said to send text, graph ics, audio and live video to an X Window System-compatible

BY ELISABETH HORWITT

But while several wendors have expressed interest in the prototype Bellcore has run into resistance in getting firm specifiresistance in getting firm specia-cations implemented in commer-cial products. The major barrier — proprietary offerings that are already beginning to appear. User interest in interactive, multimedia communications has

grown in tandem with emerging

Integrated Services Digital Netuntegrated Services Engital ivet-work (ISDN) services, which allow wrice data and sideo to be transmitted over the same digi-

For example, in the multi-consor Trivista series of studies to evaluate potential ISDN appli cations at specific user sit AT&T Network Systems found one hotel chain that was interested in having customers check in at the airport through a work-station that provides data, video and voice interaction.

Broadband ISDN, a still-em-bryonic standard that would sup-port between 45M and 100M t/sec., would probably he the sary delivery vehicle for such services, according to Bell-core. Currently available ISDN ecifications only support eeds of up to 1.5M bit/sec.,



ple media — particularly if full-motion video were included, a company spokest

A veritable hodgepodge Adding to the complexity of the network, there are 10,000 desk-

Steams. For example, there are 500 traders at the Park Avenue

office who use a mix of systems that include IBM Personal Com-puters and compatibles, Apple Computer, Inc. Macintoshes and

any one of a variety of worksta-

tions from Sun Microsyst

systems within Bear

seven regional Bell holding o panies count on "projects like this one [to] help us understand what we have to put on the pub-Continued on page 56

Three 'bears' help link trading firm

ONSITE

and the need for worldwide com-munications — is a challenge that Bear Stearms & Co. is trying BY JULIE PITTA to meet through the use of three NEW YORK - The complexity stomized networks. of the financial services industr - the processing demands of

customized networks.— Bearlan,
These networks.— Bearlan,
Bearman and Bearwan — Ink
the Manhattan offices of the Wail
Street financial services first to
users spanning the globe from
London to Tokyo.
"Bearwan was the first digital
hout-and-holler network on Wail
Street "mail dief Mership." Bear

Street." said leff Marshall, Bear Stearns' communications director. "Anyone can talk and re-ceive at the saine time." Bear-wan was purchased from Telaids Corp., and DS3 and T1 connec-

tors provide access from Bear-man to Bearwan. According to Marshall, users

Inc., according to Bush Karbal, an associate director at the firm. Still others have opted to use otron Corp. terminals run are linked together via the Bear ming stock quotes from various m local-area network. 'Imagine a very large build

The system used is deter-mined by the trader and ap-proved by his manager. "Everying with two very large trading floors that are very trader-dense," Marshall said. "We have distance problems." The trading thing in the company is based on profit and loss," Karbal ex-plained. "If a trader can make or measures more

· Flexlink aims to link via

ey using a particular system, Continued on page 55

various net standards. Page Network General's Sniffer covers all OSI bases. Page 54
 Enable Software every-where except standing still.

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OSI migration spurs latest Sniffer version

BY PATRICIA KEEFE MOUNTAIN VIEW, Calif. -

With an eye toward migration to Open Systems Interconnect (OSI)-based networking. Network General Corp. recently introduced a version of its protocol analyzer said to support the full seven-layer OSI protocol stack. The Sniffer Version 2.1 re-

ortedly can be used to optimize ance on local-area networks running International Standards Organization (ISO) ocol software, such as those ofile or Technical and Office otocol 3.0.

It also provides enhanced security features designed to iden-tify network intruders. Users can now identify any traffic to and from unknown or unauthoand from unknown or unauth-rized stations, the wender said.

Network General is initially targetting developers of ISO-based communications products, but company founder Harry Sail expects user interest in the product to pick up once OSI products really begin to his com-mercial sites, which is expected mercial sites, which is expected to occur daring the next two years. "The success of Transmission-Control Protocol/Internet Protocol has hindered the growth of OSI in the U.S.," Saal said, adding that the recent war of TCP/IP product introductions

The latest version of the iffer is the first LAN analysis.

debug networks using high-level OSI protocols, including CCITT electronic mail and X 400

FTAM It uses expert system-like technology to benchmark products that technically conform to OSI standards but that may still provide widely varying perfor-

With OSI, you can still screw with an inefficient system and still pass all the conformance tests," Saal said. "The range from best to worst [in this class of products) is just incredible," be added, claiming such a range in quality in standards-based products was not the case in the

ing intuitive menus Verion 2.1 translates OSI protocols use simple English, graphs and protocol-layer coding to enable sers to identify compatibility and performance problems.
In addition, Version 2.1 al

lows users working with ASCII output files to store captured in-formation in formats readable by popular spreadsheet programs. This enables LAN administraors to track network activity for rsion 2.1 incorporates OSI

protocol support via the Sniffer PA-1306 ISO Protocol Suite, which costs \$1,995. The PA-1304 TCP/IP Protocol Suite. costs \$995. Both products are available for all three Sniffer oduct lines, ranging in price om \$15,750 to \$24,000.

Flexlink packs proprietary bags write an application that can be ported on top lof those three

networking systems), we have

RENTON, Wash. - Flexiink In-

ternational Corn. plans to sunplement its proprietary multi vendor links with connections based on the Open Systems Interconnect (OSI) networking standard as well as to Digita Equipment Corn's Decnet, the popular vocan

Future support will include LU6.2, Transmission Control
Protocol/Internet Protocol Protocol (TCP/IP) and IBM's Common rogramming Interface for Communications (CPIC), ac-cording to Gregory Brown, Flexlink's director of technical mar-

Flexlink currently provides a family of communications soft ware packages that provide file exchange, full-view terminal access, tape-archive backup and electronic mail between IRM DEC and Sun Microsystems.

The company's goal is to pro-vide these capabilities across a Flexink offers a local channel-to-bus connection based on intel's Fastpath, "which is very fast but proprietary," Brown said. The company plans to conwide variety of networking envi-ronments. "If you have a very complex environment with SNA.

Systems integration a hot market

at year-end 1988 to \$3.8 billion in 1992 up in the commercial sector, according to a recent report from The Ledgeway Group in Lex-ington, Mass. The consulting Logica Technology Sys-tems, Inc., 2 subsidiary of Lo-gica Data Architects, Inc., firm predicted that systems inte gration projects for commercial rms will grow from \$1.6 billion

will develop an X.400 product for Tandens Computers, Inc. Based on Logica's CPLEX.400, the product will be marketed by Tandem to accounts that require message processing in a multi-vendor environment. Product availability was not disclosed.

Infotron Systems Corp. has launched the LAN Systems Divi-sion, which will develop and mar-ket local-area network products. It replaces the company's Itron Division, which marketed lowend multiplexers and LAN equipment. The Cherry Hill, N.J., T1 multiplexer vendor recently amounced a LAN server and LAN-to-LAN bridge, but it wants to transfer the country of the country wants to target the burgeoning LAN market in a more focused

The 1989 edition of "The World Telecommunications Tariff Directory" (WTTD) is available from Lynx Technologies, Inc. in Little Falls, N.J. The 10-volume, 5,000-page resource guide lists telecommunications carriers, Poulat Telephone and Telegraph authorities and related services from more than 200 countries. Included are tariffs for domestic and internations of the country of the

tinue supporting this but also to support OSI-based connections. This is because "our customers have told us they want a network

have told us they want a network protocol that they can trust into the future," Brown said. "I think people's hesitancy to go with OSI now has been due to lack of product availability; few Flexlink plans to offer its application interface to other year dors and to users who may want to port applications among the different systems supported. Brown said. The OSI implemenpeople say OSI will never hanon will allow users to access Flexink applications provide users with the same familiar

all three systems over either a CCITT 802.3 Ethernet or 802.5 Token-Ring network, the comcommands for accessing functions on the newly supported network protocols. Brown said. The implementation makes Decnet support is scheduled to be available in the second use of Intel Corp.'s Fastpath/ OSI platform for IBM and DEC processors and Sun's Sunlink OSI platform for Sun workstaquarter. OSI support between IRM and DEC is scheduled for third-quarter availability, and Sun OSI support is slated for the

fourth quarter.
Pricing was unavailable a Porting plana The vendor plans to port Flex-link to IBM and DEC OSI appli-

Flexlink also announced that cation interfaces such as CPIC as its software will now run on 8400 Superband Model DI, a soon as they become available, communications system intro-duced last week by Computer Communications, Inc. that is said to provide remote T1 channel-based links beteen IBM, DEC

> leased circuits and public data networks. Call WTTD Editor Kathleen Elsayed at 201-256-7200 for information.

Foster City, Calif.-based ASA/ Micro-MRP is offering an electronic data interchange (EDI) module for microcomputersystems. ASA'a EDI module reortedly will contain the prede sed EDI standards for each in dustry. It is targeted at small manufacturers that need to re tain or solicit business with larg

er companies, many of which re-ouire EDI transactions.

The first international interoperability tests for the Open Systems Interconnect X.500 Directory Services standard are taking piace at the CeBIT '89 trade show, which ends Wednesday in Hannover, West Germany, X.500 provides a directory database of all devices or users

Digital Equipment Corp. said it implemented its first U.S. X.400 connection with a public electronic mail carrier — MCI electronic mail carner — MCI Communications Corp. The link allows DEC employees to exchange industry-standard E-mail with Compuserve and MCI Mid subscribers as well as other V 400 hours as the subscribers. d systems throug

"We like the Codex 2382 high-speed modem for its brains, its brawn and its underdeveloped price."

See us on page 57

Enable incorporates Higgins E-mail unit

BY PATRICIA KEEFE

Change seems to be the only thing on the agenda these days at Enable Software, a supplier of network-based integrated office systems software to mostly government accounts

Not only did the applications developer recently change its name from The Software Group. but it also snapped up Conetic tems, Inc., which markets the Higgins electronic mail and oupware application.
For legal purposes, Enable

actually purchased the assets of Conetic for an undisclosed sum Conetic President Howard Case will stay on to lead the Higgins

"It behowed us to merge with a parent company that understood the systems software market," Case said, noting that software heavyweights Micro-soft Corp. and Wordperfect Corp. are readying their own

Three bears PROM DACE ET

e does. His con based on how much be pulls in."

Bear Stearns copes with its broad range of desktop machi in the beadquarters office by running various forms of Unix cause of its multitasking cap bilities. "It allows them to call up

EARWAN WAS the first digital hoot-andholler network on

> IEFF MARSHALL BEAR STEARNS

data from several different feeds at one time, which you can't do on an MS-DOS machine," Kar-

bal said.

Bearlan, which is used in the New York offices, links all the Unix workstations within the milding using a 10M bit/sec ernet network that consists of Synoptics Communications. Inc.'s Lattisnet and Novell. Inc.'s Netware communications

Thirty backbones make up arian and are used to segment bearan and are used to segment traffic, applications and user groups. The backboses run over a mix of fiber and shielded and unshielded twisted-pair and are linked together using Sun workstations as gateways as well as Digital Equipment Corp. LAN

ings for introduction Even more critical, be said.

was the fact that the price of stand-alone E-mail has eroded to 'a few pennies per user.'

hing the horizon While Conetics warily watched the horizon Enable in an effort to further extend its penetration, into the office, was looking hard

at E-mail services. Higgins' messaging capabilies will be folded into Enabe/OA, which integrates such diffunctions as spreadsheets, word processing, database and telecommunications. The merged product has alreads

been offered in response to several government bids.
Today, Enable is specified in a number of government contracts, including a 90,000-unit U.S. Department of Defense contract. As for Higgins, it won a recent 8,000-unit office automation contract for the U.S. courts.

area network, links users at the firm's three Manhattan offices Rearman is a unice/data network with short SC hite of transer sion canacity. Marshall said. It is a fiber-optic network comprising

DS3 and T1 connectors using equipment from Teleport Com cations, Inc. "It's a very high-bandwidth nethe said.

The firm's auditing activities, books and records are ed at two other New York facilities tied to the Park Avenue the metropolitan-area network. All three sites

are connected mostly to access electronic mail. There's not a lot of (other) data that needs to be exchanged be-various groups," Karbal

Regresso is a 15M-bit to 20M-bit wide-area network con-necting the firm worldwide, including its data center in New

Jersey.

The data center houses two IBM 3090 and 4381 host systems and eight Digital Equipment Corp. 8000 series minicomputers, half running VMS.

and the other half running Ul-trix, DEC's version of Unix. Two IBM System/36s and three Wang Laboratories, Inc. VS300s round out the center's systems inventory. The host systems house the vast amount of financial data that is needed to keep the firm in operation, in-cluding customer

Kaplan FROM PAGE 51

and has skyrocketed. Every market research firm is reporting record LAN shipments and projecting spiraling growth in the number of network installations during the next five years, some projections have topped 300% annual growth.

Despite this astounding in crease, LAN vendors hardly have the time to savor their

success. They are barely able to produce enough hardware and software to keep up with the backing of orders. Delivering LAN systems entails more th just boxing the product and sending it to the customer. Customers need help installing and

supporting their LANs as well an area that has been poorly ved by many LAN vendors The Ledgeway Group sured more than 600 Fortune

1,000 companies, government anencies and educational institu tions in 1988. In that survey. we asked MIS and communications managers to identify the network environments in which they will need the greatest outside help during the next two

When given a choice between voice and data commi cations as well as local-area and wide-area network (WAN) envi-

ronments, customers identified data communications overall and LANs in particular as their areas of greatest interest (see chart page 51). Beyond the ob vious overlap, these issues are increasingly important becau the transmission of information has become critical to the oper

ations of many organizations. As LANs gain acceptance at higher levels of the customer's organization, the need for addi tional value-added services is go ing to grow. Cornorate priorities now go beyond simple, traditional fivet adutions of maintenance and repair. Network integration between de partmental LANs has triggered a growing support need, partic-

orly among customers with LANs that evolved without a corporatewide or enter prisewide plan — a widespread

AN/WAN byproducts Senior management has also become concerned about LAN/ WAN integration as a byproduct of attempts to build a trans parent transmission facility for tion flow.

The bottom line, then, is that network design, planning integration, monitoring and optimization are in greater demand today because of customers

growing operating pressures.

Another factor igniting user concern is the embryonic nature of the LAN industry. Voice and WAN systems are more mature. offer greater reliability and possess network management and control capabilities that can be tered by the cust Not only are LANs not as far along in the product develop-

also not an far along on the LAN Most LANs today lack the self-service capabilities typis found in voice and WAN networks. As a result, customers are forced to rely more heavily on their vendors for implement ing and administering their LANs. Until fairly recently, this has translated into service con-tracts with local resellers or con-

nt cycle, but customers are

sultants — a less than satis tory solution for many users.
The ability of LAN yendors to sepport their customers has

thus become pivotal. It is a key selection criterion for many cus As the helis and wh fered by competing LAN systems become comparable and adherence to international stan

dards gains acceptance, techni cal differentiation is dim Increasingly, the quality of a vendor's service and support has become an important attribute - both for the user and for the supplier. Numerous customer sur

Numerous customer sur-veys have revealed that if a ven-dor fails to satisfy a customer's remedial service and support needs - for instance, problem diagnosis and resolution - then the customer will not consider the vendor for follow-on product purchases or additional value added consulting services.

Needless to say, if 3Com, Novell or any other LAN sup er stumbles in its efforts to address demands for basic service and support, it risks losing ground in the race for custor

oyalty and big accounts.

To offset this risk, strategic partners have become a critical element of LAN vendors' efforts. Major systems vendors have entered the fray in an effort to solve their customers networking needs. More announcements are sure to foll the LAN support arena. Look for this trend to continue in tan dem with the increasing con

Kapiso is director of network and go festional services at The Ledgeway Grown Tex. a consulting firm in Lev

"The demand for Codex's 19.2 kbps modem is growing fast. So you'll be glad to know you can order through us and get immediate delivery."

See us on page Si

Rellcore

switched network to allow iltimedia exchange," said uthwestern Beil Corp. district ager of technical planning

Graham. "We do need to star the equipment interface and what we have to do at the transport level to get different med rmation concurrently arriving for the user," he added. Cus-tomers are unlikely to make use of multimedia networking if they have to set up a separate call for each type of transmission. Gra-

ham sad.

Belicore's Integrated Media
Architecture Laboratory, located here, has been exploring how
such services can interface with
X Window because it is a uner-interface standard that is widely supported by workstation ven-

Companies such as Sun Mims, Inc., Hewlett-Packard Co. and Apple Computer, Inc. have expressed interest in the prototype network, accord-ing to Belicore. However, the local carriers' research and devel-opment arm has no way of mandating or even persuading workstation vendors to interface orth its networking protocols,

The divestiture decree pro-hibits Belicore from developing or providing other vendors with networking equipment specifica-tions and bans the former Bell operating companies (BOCs) from producing or selling net-

working equipment.

In the meantime, companies such as Apple are developing fiber-ootic links to the home

collaborative work rather than just individual products," ac-cording to Michael Liedhold. ger of hypermedia research at Apple's Advanced

Technology Group.

Apple, Xerox Corp., Ashton-Tate Corp., Lotus Development Corp. and others are tackling respect from a variety of sogles, Liedhold indicated. For ex-ample, Apple Chief Executive Officer John Sculley recently monstrated a product by AST arch. Inc. that allows video to be called up on a Macintosh window. Furthermore, Apple

has created Hypercard, which allows the user to point and click on interactive video. Liedhold's group viewed and was favorably impressed by Bellcore's prototype network - but only as one possible technology among many Lindhold said Boll. core has "shown how broadband

fiber-optic networks can be used in a collaborative effort, but it is purely speculative. No one has switched fiber networks right he added. When asked if Apple plans to support Belicore's specifications as a way of allowing its workstations to access future BOC services, Liedhold said "We have cordial relation. shine with the telepe and have unced that we are interest-

ed in all aspects of connectivity, including broadband ISDN. Even while they are funding Bellcore's venture into multimedia networking technology, the BOCs are going ahead with largely proprietary multimedia plans. For example, Southwestern Bell recently teamed up with ammons Communications Inc.. a Dallas-based cable television company, to test simultaneous voice and cable TV signals over

NEW PRODUCTS

Lacal-area networking hardware

msung Information Sy has announced its SE2100 Ethernet Interface card, a product developed primarily for Novell Inc.'s Netware users, the com-

The card reportedly offers a 16-bit-wide shared memory in terface with the host personal computer and 16K bytes of random-access memory for packet buffering. Scheduled for delivery in April, the product is priced at \$499 and includes software drivers to support all versions of Netware 2.0a and above

Samsung Information 77 Tasman Drive San Jose, Calif. 95134 408-434-5400

Two fiber-optic Arcnet control ler boards developed for IBM and compatible personal comiters have been unveiled by Network Innovations Corp. The Pcarc/F1 board reportedly operates point-to-point at distances up to 4,000 feet over a

single 200-micron fiber. It is perioned at \$5005 The Pcarc/F2 operates at distances as great as 11,500 feet over 50/125, 62.5/125 or 100/140 type dual-fiber cable, the vendor said. The board costs \$975

Both products use SDMA 905 connectors. Network Innovations 7909 Bond Lenexa, Kan. 66214 913-894-2277

incorrorates an 8-MHz PC pro-

Two 20-MHz workstations for IBM-compatible local-area net-works have been unveiled by Ra-core Computer Products, Inc. The SL-80 and SLE-80 Lan-stations are based on an Intel cessor and 768K bytes of ranat \$645. The two-user QL 1002 reportedly features two 8-MHz

PC-compatible processors and 768K bytes of RAM and is priced Corp. 80286 chip, the ven at \$1 145 Cubix 2800 Lockheed Way and come standard with 512K bytes of random-access memory on the motherboard. The SL-80 is reported to be a Carson City, Nev. 89706 800-648-2130 diskless workstation that pro-vides two full-length AT-compatible 8/16-bit expansion slots. It is priced from \$1,779. The SLE-80, designed for Network

systems administrators, sup-ports a single disk drive or other peripheral device and is priced at Both products carry a one-

year warranty. Racore 170 Knowles Drive Los Gatos, Calif. 95030 408-374-8290

with Quintessential Solutions The companies are reported ly developing a software pro-gram for DCA's Open Network Management System (ONMS) that will enable users to plan and

management

Digital Communications Ass

ciates, Inc. has announced a joint software development effort

e venour. The QL 1001 half-slot board

m-access memory. It is priced



Cubix Corp. has introduced two

boards for the Novell, Inc. and other network environments.

Scheduled for delivery this month, the QL 1901 and QL 1002 intelligent processor boards can be used as personal computer workstations, dedicat-ed asynchronous servers, batch servers, print servers or el

manage the growth of wide-area tworks. Dubbed the Network Re source Planning Tool (NRP), the product is scheduled to be avail-

le in the spring.
The basic NRP module will be priced at \$15,000. DCA

1000 Alderman Drive Alpharetta, Ga. 30201 404-442-4000 tronic mail servers, according to

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See us on page 57

Customer-premises equipment

Infortext Systems, Inc. has introduced the Traffix PBX Optimization System. Designed specifically for telecom man-agers, the product reportedly analyzes trunk services and calculates the actual

trunk services and calculates the actual savings from reconfiguring trunk usage, including WATS and other special services. The system can operate in either IBM/Rolm or Northern Telecom, Inc. SL-1 environments and is priced from \$5,000 to \$40,000, depending on application.

1067 E. State Pkwy. Schaumburg, Ill. 60173 800-323-6550

AT&T has unveiled the 7000 series line of voice terminals, developed for its De-finity product family.

The 7500 series of Integrated Services Digital Network voice terminals are available in three configurations designed to accommodate a 10- to 31-line appear-

All versions include built-in speaker-phones and beadset adapters and are priced from \$450 to \$880. Shipments are

priced from \$450 to \$880. Shipments are scheduled for the fourth quarter. The 7400 series of Digital DCP terminals are also offered in three configurations—a 10-line appearance model, a 34-call appearance unit and an analog single-line telephone. Pricing ranges from \$75 AT&T

National Product Center 1 Speedwell Ave. Morristown, N.J. 07960 800-247-1212

Dove Computer Corp. has announced two Fastnet Ethernet connectivity products for the Apole Computer, Inc. Macintosh

marketplace.

The Fastnet SE/30 is reportedly an Ethernet adapter designed for the Macintosh SE/30 computer. According to the vendor, the product accommodates nuvennor, the product accommodates nu-merous protocols and provides support for all types of full-function networking applications. The adapter is priced at \$599.

The Fastnet SE Ethernet adapter was developed for the original Macintonh SE machine and offers the same functions as the Fastnet SE/30, the company said. It is also priced at \$599. Dove Computer 1200 N. 23rd St. Wilmington, N.C. 28405 800-622-7627

product that gives facsimile machine ca-bilities to IBM Personal Computers and npatible systems is now av

According to the company, Profax is as sily installed option that enables com-ter users to send and receive facsimile essages at a 9.6K bit/sec. transmission

Suite 801 1111 Jefferson Davis Highway Arlington, Va. 22202 703-486-2660

Modems/Multiplexers

Coastcom has announced a modular T1 multiplexer/data service unit, developed to provide additional flexibility when configuring T1 transmission facilities.

Called the Constrom T1M III, the de vice is said to be fully programmable and can be remotely configured by using soft-

ware. The unit can connect up to eight synchronous or asynchronous data chan-nels to a 1.5M bit/sec. T1 facility. It is available in both 19- and 23-in. rack

Coastcom 2312 Stanwell Drive Concord, Calif. 94520 415-825-7500

Beiden Wire and Cable has unveiled a To-ken-Ring local-area network office cable that has reportedly been verified by an IBM-approved Electronic Testing Lab-oratory for IBM Type 6 Cabling System Specifications.

The 1215A is recomm natch panel and jumper cable applications he wendor said. The two-pair cable fea-

the vendor said. The two-pair cable fea-tures four copper conductors and is avail-able in 500-, 1,000- and 1,640-foot put-ups. Pricing is \$316.50 per 1,000 feet. Belden Wire and Cable P.O. Box 1980 Richmond, Ind. 43735 800-235-3364

EDI, Inc. has announced Telink Tand

EDI, Inc. has amounced Teinix Tandem, an electronic data interchange translation software package designed for Tandem Computer, for, instinframes.

The modular product in reported to recorded to the Tandem CLX, VLX and EXT pistforms. Features include multimodal, multiprocessing and multitateding capabilities. The noftware costs 330,000, including 15 transaction sets. The maintenance for its 4,000.

EDI 19650 Club House Road Gaithersburg, Md. 20879 301-670-0811

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Issue: April 10 Color Close: March 24 B/W Close: March 31

Comdex Spring. It's happening in Chicago, April 10-13, and it's one of the biggest marketplaces for computer

industry professionals everywhere. It's a powerful place to make the right contacts and get the information you need to competitively position your company or organization. You just need one key Computerworld's Comdex Show Issue, On April 10, that's where our audience of over 600,000 — and thousands of influential show attendees — will

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Other issues critical to PC integration — downsizing, cost savings, training, and management — are also examined.

Product Spotlight: IBM PCs and Compatibles

Multi-generational Deployment of PCs. More and more, organizations are making use of PCs from different microprocessor generations. The lead article explores how they're doing it and what roles are likely to be assigned to 80286 and 80386 machines once the 80486 emerges. PC Supplier Requirements. As computers become more powerful and their uses more critical, the job of PC suppliers is changing. Here's a look at their requirements both today and tomorrow.

Laptop Competition. Two leading laptops go head to head as utility for sales support applications is evaluated

IBM and IBM Compatible Comparison. A comprehensive chart shows how 80386-based IBM and compatible machines stack up.

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MANAGER'S JOURNAL

EXECUTIVE TRACK



orporate inforation services on 30 was most rently director of information stems at General Binding.

nternational manufactur-of business machines and sted supplies. He joined the company in 1975 Dave Benenati has been promoted to vice-president of

technical services/opera-tions at Blue Cross and Blue Shield of Ohio in Beachwood, Ohio. Benenati joined the health insurance provider in May 1988 as di rector of technical services after more than 20 years of IS experience at several Fortune 500 firms. In his previous p

Benerati successfully com-pleted the first phase of con-solidation between two Blue Cross and Blue Shield data centers. Benenati's new re-sponsibilities include conng that consolidation as work support and security ad-ministration and control.

Charlotte E. Daniel has been promoted to vice-presi-dent of the information man-agement department at Sovran Financial Corp. in Bethesda, Md. Others prosistant vice-president; Eliz-abeth A. McKinney, assis-tant vice-president; Keith E. Ross, systems officer; and Karen L. Sauls, systems

Who's on the go?

Changing jobs? Promoting sistant? Your peers wa going, and Compute any job changes in Executive Track. When you have news about any staff changes, be sure to drop a note or have your public relations depart ment write to Clinton Wilder, Senior Editor-Manage-ment, Computerworld, Box 9171, 375 Cochituate Road

Pacific Bell's modern general

Hancock parlays Army IS experience into civilian systems at telecom giant

BY JEAN S. BOZMAN and PATRICK WAURZYNIAK

uring a 26-year career in the U.S. Army, Jack Hanthe U.S. Army, Jack Han-cock rose to the rank of ma-jor general. But his special-ty was in information systems — not in armaments. "I was a technology general," Hancock jests. During his Army days, Hancock

helped keep military computers cur-rent — and compatible. Now, as vice-president of information systems at Pacific Bell, he has moved his quest for coherent architectures to one of the largest teleco nies in the U.S.

Hancock, 57, directs an IS staff of 5,000 and administers a budget of ap-proximately \$500 million for Pacific Bell, which is the largest part of the \$9.1 billion regional holding company Pacific Telesis Group. His mission, which he decided to accept after retiring twice, is to build a telecommunica-tions infrastructure, Netsys (network and systems), that will last into the year 2010 (see story page 68).

Pacific Bell literally had to talk him into returning to IS full-time, Hancock

says, since he had begun to write a book on the history of the Army's inmation systems.
"I had intended to retire and write a ok and travel, but the more Pacific Bell talked to me, the more interesting Continued on page 68

PROFILE: Jack Hancock



m Building a telecommunications infrastructure to support the company's no

IS execs' attention turns to business issues

BY ALAN J. RYAN

have outpaced technical cerns for information

Consulting survey.

The study, called "The Changing Shape of IS," is based on the replies of 120 IS executives from industrial and service organizations in the Fortune

are focusing increasingly on the effects technology has on the people, process-

es and products in their organizations. Of those surveyed, 76% believe it is more important for them to under-stand and keep pace with changes in the business than to keep pace with new developments in technology.

This lends credence to the notion of the IS executive as a business general-ist first and a technical specialist second," said Melvyn E. Bergstein, mar

aging partner of technical competence at Andersen Consulting in Chicago. Two-thirds of the respondents cited strategic reasons for taking on most projects. Thirty-four percent, of those polled said that husiness.

ed said that business needs — in poued said that ousness needs — in-cluding improving competitiveness in the industry, increasing sales or im-proving business — justified the im-portance of current IS projects. Customer needs, such as timely availability of accurate customer info mation or updating current system were cited by 31% of the respondent

as reasons to take on new projects. Of the projects IS executives tackle, 41% said software development is the most important. On the technical side, 61% of those polled said networking is their chief technical concern; other concerns cited were keeping up with the intest technology (14%) and how to best use available products and ser-vices (12%). The study also revealed that IS budgets remain a concern: 35% of the respondents said cost contain-ment to maintain output with budget

Top IS executive concerns

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Computers will never replace people

BY MICHAEL ALEXANDER

The purchase of information technology is often accompanied by the promise that automation will make employees more productive, enough so that some jobs can be eliminated.

But computers cannot re place people in any meaningful capacity; they can merely take over some of the work that people do, according to Arno Penzas, vice-president of research at AT&T Bell Laboratories and the wonner in 1978 of the Nobel nrive in physics

Contrary to what many inforion systems executives and management consultants beheve, investing heavily in automation will not make it easier for a corporation to this its middle management ranks. Pengias said during a recent interview In the future, we will need more middle managers rather than less," Penzias said, assert-ing that while automation may reduce the number of low-level workers needed to perform some tasks, it generally demands more work from managers who supervise them.

Through automation, therefore. I think it's safe to say that the infusion of computer tech pology into the routine aspects

of work expands the role of mid-dle managers." Penzias said. In addition, our growing apnetite for technology continues

to raise the sophistication and specialization of our force," Penzias noted in his recently published book, Ideas and Information: Managing in a High-Tech World

'As this process continues, I see more managerial effort go-ing into understanding the work of subordinates in order to direct their work," he wrote. "The more knowledge a job demands the more help and expert superon it requires

Technology also makes infor mation more accessible to this growing cadre of middle managers, Penzias said. In companies that come to value information as a competitive weapon, the decision maker's services will be come more valuable, be argued.



"The main job of middle man agers in the future will be to vali-date information." Penzias said. Few management consul-tants buy Penzias' notion that an increased reliance on informa tion technology will lead to an expansion in the ranks of middle management, bowever, "If it turns out to be true, then we will not have achieved what we are setting out to achieve with infor mation technology," said Jan Duffy, a Toronto-based partner in the information tech practice of the Peat Marwici Consulting Group.

"I am not convinced that the ranks of middle managers will swell," she said. "I feel strongly that if your corporation doesn't streamline and make organiza-tional changes, then you haven't done a good job of technology im-

"What is happening is that en-tire layers of managers are being stripped out," said Victor Janulaitis, chief executive officer at PSR Management Consultants, Inc. in Los Angeles. "People are using PCs to eliminate infrastructure costs, the redu procedures and controls that are necessary simply because you have layers of management. Businesses operate to generate a profit, and one way they do that is to eliminate overhead and produce a better product.



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TAKING CHARGE

Alan I. Ryan

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You didn't have to think twice about starting a lottery in your department to eass along those season tickets to the sallet you got as a job perk. After all, having to get gussied up to watch come dancing and sit next to the chief executive officer's wife is not your idea of a good

You think, "So maybe I don't fit in all that well with the corporate culture, but I'm too valuable an asset for them to even think about letting me go." You

could be wrong.

Technical talent, job knowledge and advanced degrees certainly add to an em-ployee's appeal, but there are some oth-er subtle skills that employees can cultivate that might belp them avoid the ax. According to Donald H. Sweet, a hu-

man resources management consultant at Westwood, Massi-based Costello & Co., employees should consider and prioritize areas that will probably not be covered in any formal review or job description. Such areas, he says, include understand ing the company's total culture.

Sweet says that while most people realize that politics intensify as the employee's importance in the organization increases, what they might not realize are the social and cultural implications of nolitice

For instance, an outdoors type who keeps hunting and fishing gear in his truck at all times might be inviting trouble in accepting a position in which season tickets to the symphony and ballet are ag the perks

In his book, A Manager's Guide to Conducting Terminations: Minimis-ing Emotional Stress and Legal Risks, Sweet also says that employees should understand how their value system fits in relation to a job, the company and its

"We all have a certain point at which we 'draw the line,' "he says. "Establish this compromise point in advance so you always know where you stand."

One of the best ways to learn a com-

pany's culture and unspoken rules is to find a mentor in the organization. While

find a mentor in the organization. While that person cannot save you from the ax, the relationship can provide valuable-di-rection and guidance that is not part of any formal orientation or training within a company, News et also. Employees should also grade them-selves, Newer aggests. Because many appraisal systems do not function a reg-ainity or realistically as they should, em-sisting the company of the company of the save provided to the company of the large for the bools' associated. After also now weaks to be surrorised at review. one wants to be surprised at review

A flaw that many executives have. Sweet says, is assuming they know every-thing. No matter what your qualifications, it does not burt to listen to advice.

Also, improvement of written and verbal skill should be something all executives strive for. Finally, he says, have fun and enior

our job. One of the most powerful tools for success is the ability to take pleasure in your work. The pride that comes from professional achievement is an asset in career advancement because it creates a positive outlook that influences the attitudes of colleagues. If you don't like your iob, he says, it is time to look for a new

Ryan is a Combuterworld senior writer.

CALFNDAR

CHICAGO — The role of corporate MIS managers in the electronic publishing envi-ronment in the theme of the upcoming Corporate Electronic Publishing Systems (CEPS) Show and Conference to be held here May 16-18 at McCormick Place:

More than 60 speakers are scheduled to give presentations on a variety of topics that range from desirton publishing to open architecture, according to the show's speci-

The conference will be structured around a two-track instructional approach cover-ing how corporate information is assembled, managed, packaged and disseminated, the soossors said. The first track will be devoted to senior-level corporate executives re-

sponsible for MIS, technical document publishing and systems integration. The second track will cover functional issues such as electronic printing and publishing systems. desktop publishing and graphics integration. CEPS is sponsored by Interconsult, Inc. in Cambridge, Mass., and the Cahners Exposition Group. For any further information about the show and attendance details, contact Goodwill Communications, Suite 914, 1280 21st St., N.W., Washington, D.C.



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Netsys goal is seamless simplicity

With a downsized IS staff, now hovering at the 5,000 level, and a well-planned budget, Pacific Bell is looking for creative ways to fund Netsys expansion. Hancock has decided that he can save resources by discontinuing the maintenance of aging

systems and by retiring obsolete systems.

When systems are needed, Pacific Bell has 2,000 programmer analysts to work on the problem. What they create may, however, he a compromise between today's systems

and the Netsys architecture of the year 2010. But that's all The ultimate goal of Netsys is an ideal, but our network is

real-world," he notes. "We have to never let the best he the enemy of the good JEAN S. BOZMAN and PATRICK WAURZYNIAK

Pacific Bell CONTINUED FROM PAGE 61

the prospect of having this job became," Hancock says in his San Ramon, Calif., of-fice in the rolling hills east of San Francis-

Now that he has the job, the amiable Hancock says he is in no rush to retire. One of his guiding principles helps explain his multiple IS career moves, he says, Rephrasing the credo of an associate at Wells Fargo Bank NA, his last place of employment, he says, "Like a growing plant, eaple ought to repot themselves every 10 years or so

Hancock's career in the Army, which hegan in 1952, paralleled that of the computer industry. Hancock was among only a dozen young officers that the Army sent to universities to learn what they could about the then-infant computer-science field. He attended West Virginia University to study electrical engineering and was ty to study electrical engineering and was later posted in Washington, D.C. "When we came back with advanced

degrees in electrical engineering, we were given assignments that hegan to ap-ply this technology," Hancock says. Even then, the chief signal officer knew that data processing was going to assur a very significant role in the Army."

By the late 1950s, Hancock found himself assigned to the U.S. Army Computer Systems Directorate, which was part of Systems Directorate, which was part of the Signal Corps. Back then, Hancock notes, the Army had computers from IBM, Sperry Corp. 's Univac division, Bur-roughs Corp., Honeywell, Inc., Bendix Corp., General Electric Co., Control Data Corp. and NCR Corp.

Getting these systems to interchange ta was a nearly impossible task, particularly since the concept of writing portable software under Unix was still decades away. To get some measure of compati bility, Hancock says, the Army had to rely on writing programs in standard lan-guages such as Cobol and on recompiling programs for use on different machines. Hancock later moved to the center for

Army information systems at Fort Hunchuca, Ariz, Then he retired - for the first time — in 1978

Transplanting roots Soon after, though, Hancock was ready for his first "reporting." He moved to New York, where he became senior vice-president of MIS at Chemical Bank. Later, he moved to Wells Fargo Bank in San Francisco, where he was an executive vice-president of MIS.

Although Pacific Bell does not have as

any incompatible CPUs as Hancock faced in the Army, there are still large chunks of proprietary IBM, Digital Equip-ment Corp. and Unitys Corp. code in the dozens of mainframes that power the tele

ounications network. In view of that mixed-vendor environ ment, Hancock's strategy is to aim at the Netsys architecture of the 1990s and to continue to add nonconforming systems as needed.

"We have a vision of Netsys, and then we ask how we're going to get to that vi sion," he says. "The trick is deciding how wide a [variation] we can tolerate on the road to getting there. We've realized that we can't afford to redesign applications every three to five years. We'd like to be able to change out the hardware to take advantage of new technology without mging the applications

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EXECUTIVE REPORT

HUMAN RESOURCE DEVELOPMENT

Help Wanted: Heroes and visionaries preferred

BY JAMES A. CHAMPY and MICHAEL HAMMER

n increasing number of information systems executives are discov ering that their shility to deliver on the huge potential of information technology stumbles on one point - the information systems human

A typical scenario nu thing like this: The new IS executive at a manufacturing compa ny successfully convinces his management of his vision for information technology. As he saints it, information technology can be used to reengineer archa ic processes, deliver vital decision-making information to the company's top managers and generate new products and services - in general, to transform

But as soon as the executive gets the green light and starts trying to deliver on his promises. he runs into a stiff challenge from his own staff. For years, these people have been buildi and maintaining the usual fare of corporate systems: financial sys tems, order processing and the

the way the cornoration and its

Implementing the chief's new vision would require the staff to take an aggressive role in the corporate organization. At minimum, they would have to build systems for which there were no prior models and develop intimate working relationships with people in the business units. These are adjustments that they are not prepared to make.

As a result, the IS executive's rosy dreams turn into a nightmare. Sixteen months after bearrived, the applications backlog has only grown bigger. Systems that were supposed to process orders faster, simplify customer interaction and dovetail sales

Champy, a vice-charmaged the Index Group, Inc., heads the firm's IS human resource practice. He also oversees In-PRISM. Hammer, president of H mer & Co., is co-director of PRISM



executives need people a

where to be seen. The IS staff is the business of IS is carried out in turmoil. And the credibility of by lower level programmer/anathe IS organization has plum w-level clerks

ed out in many organizations right now, and unless a better match can be engineered be-tween what is required of IS departments and the people staffing those, organizations, the situation will worsen As IS managers are starting to realize.

their staffs are populated with people who are not up to meeting contemporary challenges center around the following: · Analyst "scribes" who simply record users' specs and com-plaints without digging into the root of the hooiness neoblem. As

beving that every useful solution requires IBM's CICS, and the other insisting that all meaning-ful work can be done with a PC · Staff who are oblivious to the ness they are in and indifferent to learning it, preferring to think of IS as their business. Obviously, something has to he done to address these limits.

Opposing camps of self-de-clared technologists — one be-

row specialties

INSIDE

Conventional training is not enough

To have staff is not the same as to hold

tions but the measures taken are not so obvious. Past attempts to ungrade the perforince level of IS staffs have of ten failed, and managers are not always sure why. Some have tried recruiting users and MBAs nto the IS organization, only to have the transplants rejected by the department's technology-oriented culture. Others have hired brighter, more versatile technical people, only to see them driven away by the mundane work load

The fact is that the people IS organizations need to belo much their lusinesses forward require a new kind of environment in rhich to work. Changing the face of IS means going beyond just instituting new hiring prac tices. It means changing the skill mix, the organizational structure, the management methods and the value structure

The work of the IS organization is changing in ways that devalue

For the last 30 or so years, in formation systems has operated - a department of specialists who waited for business people afraid to broaden their horizons to define their requirements for for fear of decreasing the pera system they wanted, then took ceived market value of their parthose requests back to their own sohere and translated them into

program code.

More and more, he this work is being shifted away from the IS area. Organiza are finding that, for many of the more straightforward applica-tions, commercially available, packaged software is adequate. In addition, many of those who use systems are now capable of or their own.

The real utility of the IS organization no longer lies in routine development. Instead, the kinds of tasks in which the specialists can shine are in the rapid devel orment of competitive and, to a certain extent, speculative systems; in harnessing disparate and in helping to redesign businets processes through informa n technologies. These are jobs that call for a

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EXECUTIVE REPORT

Heroes wanted CONTINUED FROM PAGE 69

been prevalent in IS organizations until now. They demand a tolerance for ambinow. They demand a tolerance for ambi-pairy and an understanding of the compet-tive environment within the industry. They also require a finely hone de sense of where technologies are going and how they interrelate and the ability to build close and productive working relation-ship with line and staff managers. The Partnership for Research in Indo-mation Systems Management (PRISM) *

The Partnership for Research in Infor-nation Systems Management (PRISM), a point research offering of Index Group, no: and Hammer & Co., two Cambridge, Mass.-based research and consulting irms, began to conduct research in this rea in 1986. Since then, PRISM has ound three new IS roles emerging, tag-ings them with whimsical but highly de-criptive titles: "Witch Doctors," "Magi-tions," and "Witgrards.

cians" and "Wizards.
Witch Doctors are leaders in the effort
to revitalize the business. Think of them
as internal consultants, advocates or
change agents, but first and remost
they are business process redesigners.
These individuals can understand a com-

ses and conceptualize how information and information technology can create new

Managerial processes are the ways managers gather in-formation, make decisions and interpret the results. Opsequential steps that lead to a phyct or service; for example, the continuum of re-search and development, procurement, manufacturing, marketing, sales, distribution

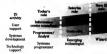
and service Envisioning new ways of structuring these processes requires a daring thinker, which is what a good Witch Doctor is. As one IS manager

put it, Witch Doctors are "people who can think independently of what they are be-But independent thinking is only part of the picture. Redesigning managerial and operational processes is only possible if IS people are able to work in lockstep

with business people.

Such partnerships do not happen easily. A Cobol programmer of financial systems cannot be thrust into a securities-

Work shift



trading operation and overnight become a "partner" with traders in overhauling the trading function. For one thing, a Cobol

programmer would probably be lacking some essential communications skills such as listening, relationship manage

Witch Doctors must be salesmen for

WEIGH PRISM (NORS CROUP AND HAMMER AND CO.)

unclear at the outset. The arks of their method are the flexibility with which they approach problems using technology and the speed and intensity with which they build ava-

The passion that Magi-cians feel about doing things right is exceeded only by their possion for results. In other words. agicians are willing to change their views to get the job done.

In addition to process

redesigners and result-oriented programmers, IS orzations need workers who have expert knowl-

who have expert know-nedge of advanced technologies — particu-larly in integrating multiple, disparate technologies. These are the Waards. Waards are characterized by genuine tical expertise and a wide-ranging

tool kit. They not only build complex sys tems but can bring to bear the latest, most propriate technical tools. Witards play appropriate technical tools. Wisards play three mijor roles: researcher, teacher and bailder. They must investigate emerging technology transfer and introduce the new technology into the corporation. Organizations need Wisards to stay on top of new technological trends and experiment with new technologies. Wisards also help the business determine which technologies are ponentially transformation. change and innovation, enlisting support for specific changes, keeping implementa-tion on track and pulling all the levers to make sure the change succeeds.

technologies are potentially transforma-tional and which are essentially useless. There has been much clamor of late for

technologists who have rich business knowledge and skills. But in the years to come. IS organizations will need even more top-notch technologists who can integrate the heterogeneous information systems found across the corporation hese organisations will count on their schnical experts to oversee the merger of voice, data and visual technologies; mage the construction of elaborate dachases connected across business func-ons; and follow through on other comex technology initiatives.

To understand how the infusion of

The new broad The actual building of new types of sys-

tems demands a new broad of developer

tems demands a new broad of developer

the Magician. People skilled at building large systems without having a complete design are needed to get these sys tems moving into high gear and rapid use. Magicians are already at work, unrecmagicans are arready at work, unrec-opined, in some organizations. They are the "order of magnitude" programmers who consistently produce many times the output of their typical colleague, with a knack for spotting business design flaws. If a special project is performed in "skunkworks" fashion, a Magician-inthe-making is the person who naturally emerges as chief slounk. Magicians are people who thrive on ambiguity and difficult situations. They have the capacity to conceptualize an entire system - even if all the details are

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Who they are and where to find them

o one is going to stroll in and apply for the new informa-

on large, complex systems in his intense, energetic work style.

ts of technology.

JAMES A. CHAMPY
and MICHAEL HAMMER

se new skill sets would affect IS organizations and the business as a whole, con-sider the following applications development example: The need: A vice-president of sales has

heard that other businesses are starting to automate their sales forces and decides he also wants to use computers to make his sales team more efficient and effective. Exactly how this could be done, he

The traditional response: The IS or-ganization gathers a group of intended end users to define the system's require-ments. In all likelihood, the Role change produces small numerical difference

level sales personnel, be-cause the vice-president of Within a 100-person staff, there would be three fewer system sales has little time to think or talk about technology

The requirements group defines the functionality of the system and then has the information systems representative make a reasonably detailed design of the sys-tem. From this point on, the system's creation proceeds without much, if any, input onths or even years after the fact, a system is produced that automates exist-ing processes (such as putting the sales tickler file on a computer), but does little to

final. It cannot change as the needs of the sales force change, because the IS staff as no continuing involvement in the sales

The new response: In a setting in which the IS organization has made room for the new kinds of employees we have described, the response and the outcome would be quite different. A Witch Doctor sly formed a partner-

ready developed an understanding of the selling process, the customers and their needs, the competition's sales approaches and marketing channels. More important, the Witch Doctor

huld understand how a new approach to ling could affect existing work methods d incentive structures. That person could then determine how to engineer the system to minimize disruption while maximizing desired results, such as better cross-selling through information shar-ing, improved prospect identification and the development of tailored offerings.

Working from the concept spelled out by the Watch Doctor, the Magician would build the system. Most likely, be would

build it in stages to give the sales force a

While the planning and construction is under way, the Wizard would stand ready to suggest any appropriate leading-edge technologies that would help make the technologies that would help make the new sales process a success. He or she would ensure the most bang for the buck in hardware, looking out for dramatic technology innovations. This Wuxard would find a way to tie the sales system into the corporate information architec-ture and would make sure no procure-ment glitches blindsided the project.

The new result: In terms of this exam-

ing would be to produce a more effective, more popular and long-lived system for

gest gains from these ids of changes are not re-ted in narrowly defined initiatives. Mandates such as "Cut our product devel-opment time in half" or "Boost product quality and reduce our defect rate by

50%" are ideal for the kinds of employees described here. Because they stand

improvement in the overall human re-sources situation can be realized, IS man-agers will have to rethink the value sys-tems that govern the way that work is

chance to shape successive iterations.

The Magician would actively promote the system to the sales force and to other departments whose cooperation is need-ed. He would also help manage the expec-tations of the sales vice-president and oth-Zero tolerance
The prevailing ethic in most IS organiza-tions puts qualities such as precision, log-ic, thoroughness, reliability and control at ic, thoroughness, reliability and control at the top of the list. This ethic rewards risk

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EXECUTIVE REPORT

avoidance, security, conformity, patience and — all too often — a tolerance for me-diocrity. The new breed of IS employee cannot thrive in and will not settle for an ironment that is characterized by

Instead, IS organizations must exalt in-novation, creativity, leadership, entre-preneurship, flexibility, urgency and in-tensity. The new ethic must favor a willingness to take risks, an ability to tol-erate ambiguity, aggressiveness rather than tast researchers.

ting with these new human re-ces models will — in most corpora-s — require a new structure for the IS

ation. The structural difference organization. The structural difference will not, however, be in size; overall, we expect that the addition of Witch Doctors, Magicians and Wizards will reduce conional staff levels only slightly. Rather, the difference will be one of orienta-

Equitable recognition and awards will be very important in terms of attracting, developing and holding the kinds of em-ployees that IS organizations are going to proyees that is organizations are going to need. Contributions to the organization must be recognized and rewarded fairly, and structures that encourage mediocrity

ould be scrapped.

One large industrial company, for example, is changing its incentive structure so that IS staff members can grow profesnally and financially through the acquiition of skills rather than the progression In addition, this company is flatteni

the IS organization by cutting the nur of management levels from 14 down to six. Hierarchical structures are inhibit to those who believe the opportunity to perform an important task is more important than progressing up an organization

Other IS organizations have rest Other 15 organizations make the tured in order to develop better relations with their users. One has institution an account management program, whereby an information systems person is given complete responsibility for managing the relationship with a particular business

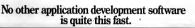
One advantage of this kind of arrange ment is that, if someone in the business department has a problem with systems. ney have a "point person" to call.

Other advantages
Another benefit is that because the position is defined, for example, as account
management rather than technical support, the focus of the position is on making
sure that needs are being met and not just
that a particular information system is
proceeding on target.

proceeding on target.

Strong performers are naturally attracted to new challenges, products and
services, technologies and business and

Partnership with peers is also reward-ing to the IS professional in this





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Managing the new mix

S managers may find it hard to deal with the new kinds of to deat with the new times or worker in their departments. Strong performers may also be eccentric and impa-st with those less bright or capa-than themselves. Independent

ble than themselves. Independent self-starters may not want to live self-starters may not want to live within the rules. The watchword for managing these individuals is lendershap. Tolling the self-starter may be self-starter management. There is no question that masaging is employees is going to be a become the norm, But by the time that happens, 15 managers will have changed quite a bit themselves. The Managers in themselves. They will not be
this area will most likely be "doers" themselves. They will not be threatened by having subordinates who may be brighter or have more expertise than they do. They will concentrate on staff development, concumitate on staff development, leaving task management to the in-dividuals. Most important, they will be responsible for nurturing an at-mosphere of flexibility, individual freedom, stimulation and challenge, reaping the rewards that go along with unbittens projects. th ambitious projects.

If this sounds like a revised job

description; it is. In the new envi-ronment that they are working to create, IS executives will also be fitcreate, is executives will also be fit-ting themselves into a new role, one that might best be described with a title such as "chief alchemist." This transformation will not hap-pen overnight, so there is no need to reverse all your policies and man-neguest and man-

Octors, Magiciana and Wisards non't arrive on your staff over-ight, when they do, they will form special team that naturally devel-pe a special environment and spe-ial management methods. As their umbers grow, so will your skills in

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EXECUTIVE DEPORT

kind of situation. Stars want other stars around them — it signals an organization that appreciates and rewards creativity. In addition, collaboration among highpowered peers is more likely to produce etter ideas.

Other environmental features important to the development and retention of top performers include flexibility and un-structuredness, a tolerance for risk-taking and a long-range vision for the organi

ng from here to there ght conditions must exist in order source new roles such as Witch Doctor. Magician and Wizard into an IS organization. A strong working relationship should already be in place between IS and

HE NEW IS ENVIRONMENT will be based on what. for some, may seem like a revolutionary and unwelcome premise - that the success of developing an organization rests not on sprinkling resources evenly on

everyone, but on zeroing in on a few strong individuals who will, over time, influence others.

the business units. Staff members must be capable of assuming the new and more nanding roles, or else the IS organiza tion must have the wherewithal to recruit such individuals. Finally, the organization must be ready to make major changes.

When one or more of these ingredients is missing, as is the case in most organiza-

tions, then it is necessary to go through an interim stage to bring about gradual change and set the scene for these new types of workers. Interim roles include the following:

Account managers: As described above, this role is one of faison between a user organization and the IS function. Ac-

count managers are responsible for inter-preting users' needs. They facilitate re-quirements definitions and applications planning, but lack the broad scope or now

rful influence of Witch Doctors. Generalists: These are flexible systems developers who can form a small team to get a key system off the ground. They are versatile and work rapidly, but fall short of the order of magnitude pro-ductivity levels of Magicians.

Emerging technologists: Individ-uals at this level scan all relevant new and emerging technologies but without the raw technical prowess of Wizards. They are drawn to the new and are adept at communicating technical capabilities to

communicating technical capacities to non-IS people, but they lack the innova-tion and creativity of Wizards. Those who fill the interim roles may become candidates for the final roles, but this will happen infrequently because the full-fledged roles require higher orders of skill and scope. The interim roles will be important but will not automatically turn into Wizards and Witch Doctors.

Molding a traditional IS organization

even a very healthy one — into a community of top performers is an evolution-ary process. Managers can expect their organizations to move through three broad phases:

• At first, the new breed of employee

o At 1881, the new breed of companyed pops up here and there in the organiza-tion. They are top performers in context but do not make the highly leveraged con-tributions of which they are capable. Managers need to recognize them, retrain em and give them room to increase eir individual contributions. their individu

. Next, the pool of top performers is consolidated into a separate unit to give them identity and prove their value. This can be initiated as soon as the talent pool reaches critical mass; this phase may last two to three years . As the ranks of the new breed grow, and as their methods and attitudes are nur-

tured throughout the organization, they are dispersed and integrated so that their ethic permeates and eventually domi nates the firm.

These phases are accompanied by many other deliberate changes initiated by IS management.

Further changes Job descriptions are rewritten, and the old

roles of applications programmers, main-tenance programmers, analysts and enduser computing staff are reshaped. At the ne time, career paths and compense tion structures are redrawn, perhaps with the idea of rotation, and certainly with alternatives to the typical march up the

ternatives to the typical march up the management ladder.

In related moves, new hiring programs are being launched to recruit from MIS and MBA programs and to comb the ven-dor community for technical talent, and training programs are being put in place.

The new IS environment will be based. on what, for some, may seem like a revo-

lutionary and unwelcome premise — that the success of developing an organization rests not on sprinkling resources evenly on everyone, but on zeroing in on a few strong individuals who will, over time, influence others

Naturally, this requ deliberate effort on the part of IS management and many tough personnel decisions along the way. But the result should be a staff of bright and flexible individuals and a steady stream of powerful, rapidly de

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Stretching your staff to fit the future

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Extraordinary times call for extraordinary measures, and nowhere is that more true today than in staff development for

nformation systems organizations.

IS managers are facing the need to reshape their organizations and staffs to meet new kinds of service demands, ones meet new kniks of service demands, ones that presuppose an understanding of the business goals and the functions of indi-vidual business requirements. This kind of renhaping is never easy, but it is made more difficult by the fact that, while com-

more difficult by the fact that, while com-pertition for 15 professionals with "the right stuff" is intense, budget tightening often prohibits unrestrained bidding. In more ordinary times, the standard formula for professional development was

formal instruction such as courses, worktypes of training may be, they tend to concentrate on the acquisition and honing of job skills, as opposed to the broadening of

the individual. More creative measures must be added to the mix if IS managers hope to turn their technical staffs into business support professionals. Some of the following strategies are currently being implemented by progressive IS organizations:

• Providing coaches and mentors.

• Forming partnerships with client de-

Initiating job-rotation schedules and

ing semi structured roundtable discussions on emerging is-

The first strat egy, providing coaches and mentore to arm ees, is one that is familiar to most west manag ers, but few IS or-

nizations have

ed suit. Coaching refers to the process of having an upper level systems manager work very closely with an em-ployee to help him learn skills that will enable him to advance in the department and

Mentoring, a more personal approach, means entering into in-depth relationships with selected individuals to help esish their identities with key managers and customers. This process also allows employees to take on levels of responsibilty that might be beyond the scope of their

Successful mentoring requires strong emotional commitments, which is not as prevalent among the managers and staffs of systems departments as it is among their colleagues in other areas, such as marketing, manufacturing and finance. One place that has benefited from an

organised coaching strategy is Yankee Atomic Electric Co. in Bolton, Mass. Marian Motyl-Szary, director of computers communications at Yankee, worked closely with one employee who moved from a job in the mechanical engineering department to a position as se s manager in the applications area.

Stokes is a senior vice-president of QED Informa-tion Sciences, Inc. in Wellesler, Mass.

"This person was an excellent engineer and a big user of applications," Motyl-Szary says, "With coaching on both techwith himself

nical and people issues, we helped him be-come a first-class applications manager." Motyl-Szary's coaching consisted of teaching the manager about the ins and outs of the systems department, showing him how to renegotiate deadlines with customers when pecessary and beloing him understand the importance of cus

Motyl-Szary also helped the manager develop a prioritized action list, "so that be can tell me in five minutes what's going

on in his department and what's going on

The second strategy developing part. nerships with client departments, is beginning to surface in IS organizations. Charles Hennon director of computer information services at Cleveland Pneumatic Co., is a leading advocate of having client organizations work with an IS coordinator. "These coordinators have been well received." he says. "They have IS backgrounds but also know the clients' businesses . . . and give the clients direct input into information systems." These coordinators report directly to the client

departments and meet with the client on a monthly basis to review projects. Such partnerships help IS em develop a better understanding of the organization's business strategy

Another emerging professional development strategy involves rotating personnel between IS and client departments and offering mini-internships in user areas. Motel Szary rotates the job assignments of his employees to provide them with job enrichment experiences, in creased motivation and the practical enefits of enterprisewide points of view.

At Fidelity Bank NA in Philadelphia Catherine L. Button, senior systems offi cer, says the bank offers two internship programs to give IS professionals an in

depth appreciation of its businesses. One



EXECUTIVE DEPORT

program is open to all bank employees; the other was designed specifically for IS

In the general internship, known as the Professional Development Program. promising employees are sent on a fivemonth tour of other departments, spend ing time in branches and almost every functional department.

"Our systems people learn hanking and our bankers get to perform systems functions," Button save.

Once the employee has completed the internship program and a position is avail-able, be may be able to change jobs and work in a different department. The special "Career Path" program for IS staff offers employees 40 hours of formal training and 40 hours of work in a gram gives IS employees a chance to work for a week in the application areas they support, including check processing. cash management, trading and securities and international banking.

strategy — holding semistructured roundtable discussions among IS staff, clients and managers — is inexpensive and easy to implement. The only cost is for books, journals and magazine articles that are used to facilitate the discussion. The usual process is to choose a hot topic each week, assign the reading materials, select discussion moderators and conclude with

recommendations for action. The main requirement for success non embarking on informal professional

user department. Button says the prodevelopment is to view the entire organi-zation as a learning resource. There may be some resistance at first, from both the information systems staff and the hunsunits. Problems that can crop up center around the issue of power and influ ence. It may also be hard for both IS and client departments to find the time to get together. In addition, some organizations

may have trouble implem user-exposure programs.

The rewards for persistence can be substantial, however. Such informal pro-

grams can increase the effectiveness of formal training. In addition, for modest ays of time and money, firms can reap able benefits in more knowledgeable. petent, motivated and prof

The toughest challenge is

For an educational institution, nothing is more important than the smooth exchange of information. That's why

"Our college needed to onnectivity Colleges and enter the Information Age aniversities, like most places. But we weren't sure we could

acquire computers and telecommunications hardware afford the price of admission. ing up with little or no For one northeast college, AT&T Network Systems, working with the local telephone company, demonstrated that ISDN was the solution. Their information services manager explained: "ISDN gave us the best capabilities for the least cost. And we didn't have

to trash our existing systems With central office-based ISDN, ordinary phone lines become the links in a fully interactive network. This trans lates into many applications and benefits. Voice and data can be transmitted simultaneously. For example, students and professors can confer with the Dean, who has on-line access to student records. Flectronic mail streamlines. internal communication, so course enrollment changes can be posted immediately PC/terminal access to host computers and electronic file transfer extend every user's access to sophisticated software and multiple databases
As the college's IS manager parts it: "ISDN can revoluonize the education experience. It's going to make us a better college. And, bottom line, a more competitive

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Planning for the '90s

The executives re cross section of in and computer man ollowing is a summary of se the highlights of the discussion Seven of the 10 executive

job requirements and capabilities. Some models were constructed by hiring a consultant; others, by an ad hoc committee of managers a dividual contributors. Some dels for generic positioners did so to identify

training programs. use courses to h

through modeling.

Seven excurives said that most new talent will be hired externally and that they will be looking primarily for unique IS experience, such as a network specialist. Six predicted a shift in recruiting specifications as they try to hire candidates with different process. ferent backgrounds and more go eral business skills.

Although the primary source for new talent is college recruiting, most of the organizations repre-sented define critical areas in which they need experienced people and then pay market or above to per Eight of 10 said they plan and r

view development programs for IS professionals based on individual performance goals, career develop-Participants were asked to describe what new activities they ex-pected to implement in order to fur-ther develop their IS staff. Some of

lowing ideas emerged: itute more job rotation be-IS and business units to im-understanding of the busient across fur

te new hires at 30-, 60- and



How to keep headhunters at bay

BY DAVID GABEL

Finding good help is not getting any easier, but hanging on to the skilled people you do find is getting a lot tougher — at least if you are an information systems

"If a manager doesn't have his leadership skills working right, if he hasn't found tasks for his people that allow for a little diversity, he may lose them," explains Robert Hammond, a high-tech headhunt-

Gabel is a free-lance writer based in Northport

er based in the Boston area.

When Hammond or others in his profession call, information systems staffers may listen and then leave for better opportunities. Hammond says they are listening more and more these days.

Strange as it may sound, companies such as Borg-Warner Automotive, Inc. and Pennwalt Corp say that the way that the yel peep their valued IS people from being tempted by those in Hammond's profession at by increasing their value.

"We haven't had the need since the early '70s to go outside and recruit data processing management," says Vito Battaglia, the manager of materials and information services at Borg-Warner's Bellwood and Frankfort, Ill., plants. — While competitive salaries and a good management style are certainly contrib-

summagenerine 39 ear e cetaminy construuting factors, Battaghia says the environers ment and the challenge of the job are what keep people in his company. IS personnel are encouraged to venture into the business units to learn about the functions behind the systems, he points out.

"We allow people to progress at their two mate." he say. "In the are asserted."

own pace." he says, "but we are aggressive in encouraging them to do so." As a result, virtually all promotions and ad-

vancements are from within the ranks.

The same homegrown philosophy prevails at Philadelphia-based Pennwalt,

vais at Philadelpha-based Pennwall, where finding personnel who can blend their fechnological skills with the company's business plan is crucial, notes Robert M. Rubin, vice-president of management information services. The job skills required today do not make qualified per sonnel tougher to find — nor are per barrier to replace, according to Rubin. "As you improve communications among your employees, cross-train them; wour base of numified anodicaries bread-

ens," he says.
Rubin integrates his personnel plans into the organization's project plans and integrates the firm's overall objectives into the corporate plans. Say, for example, the corporate goal of your vitamin pill company is to permit your customers to fill their orders more quickly. To that end, the business plan calls for integrating

HILE competitive salaries and a good management style are contributing factors, the environment and the challenge of the job are what keep people in a company.

manufacturing into the ordering system. Now that you know what the goal of the business is, you can develop the personnel plans needed to meet that goal.

Pennwalt scrutinizes its business plan annually. After its completion, Rubin devices his personnel plans. Trying to suit the employee to the project and vice versa, Rubin spends much of his time juxtaposing an employee's skill level with his request for a special project assignment, his career path options and so on. "If an individual needs to strengthen

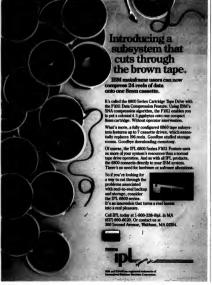
"If an individual needs to strengthen some skill area, or if he has a goal for his saw advancement, then his managers have to ask, 'How does this particular plan (for some activity of the MIS organization work with this individual?' "Rubin says.

Easing the planning task
Such a strategy eases what could otherwise be the burdensome task of succession planning. When key people leave
Pennwalt, the vacated position is reevaluated in terms of its continued contribution
to the organization's goals and what person would be best qualified to fill the posison would be best qualified to fill the cost

"We have contingency plans in place (for personnel vacancies), and they are reviewed at two levels above the position," Rubin says. "We look at the job description and at plans for the company. I have replacements identified, but I would still rethink the goals of the organization and discuss it one level up. I would make sure of the direction in which the organization is going and that the new person supports the business plan."

Planning at that level of detail is a rarity. It is more typical for IS managers to approach succession planning as Battaglia says he does — identifying possible successors for only a few of the most crucial management-level staffers.

And, at many organizations, this succession planning does not happen at all. "I don't think most MIS executives have any [succession] plans in place," Hammond says. "They plan to call me." •



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IN DEPTH

Striving for Unix security

Can IS protect the operating system or are its back doors too easily opened?

BY SANFORD SHERIZEN

and FRED ENGEL November's wellpublicized worm attack struck more than Inter-net's Unix-based electronic mail system. The operating system and AT&T, its major developer, are also suffering from the impact. Other potential victims may be orations and govern that have accepted Unix for its

functionality and portability. Unix has a reputation for being insecure. But is it inherently insecure? The question has enormous economic, political and technological sensitivity, but it and others must be answered The facts are that Unix's se-

curity depends on the version of the operating system being used, what the systems adminis-trator has established as controls and what pressures for security improvements develop from the

What are the security prob lems associated with using the Unix operating system? How can IS best safeguard information running on Unix-based systems? What specific approaches to improving the security of Unix systems will be effective

Unix popularity Secure or not, there is no doubt

that Unix is popular. The results of a recent survey of Unix users ICW Focus on Integration, Feb. Sherpen is president of Data Security

Systems, Inc., an information security consultancy in Natick, Mass. Ergel in vice-president of engineering at Technology Concepts, Inc., a wholly owned subsidiary of Bell Atlantic Corp. that specollege is network management pervices and resolute and is based in Sad

6) indicate that the reasons for Unix's growing popularity among users range from its portability and cost-effectiveness to its proven success in other organizations. Certain companies have little choice in whether to select Unix, because the software programs best suited for their specific needs are often

According to the survey, the biggest barrier to increasing Unix usage is the lack of trained technical expertise, the lack of

compatibility and the lack of application software. Framingham, Mass,-based market research firm International Data Corn has cited the lack of proven commercial and application software performance and the standards as also working against Unix.

Interestingly, security was not mentioned once in the survey results, even though the questions were asked in Decem-ber, during the height of the pub-licity surrounding the Internet

virus attack. Yet security obvimore than two-thirds of the respondents who indicated that they were using communications links between Unix and non-Unix systems for file transfer. terminal emulation. Transmis sion Control Protocol/Inte Protocol and E-mail, cause of the variety of Unixbased products out today. But because of the independent de-velopment work that has been

tone on Unix, the user is often faced with the fact that one Unix product is not always the same as another. In reality, there are a ther of Unix versions, that share only certain features and

Unix's ready availability a etability have caused if to be the operating system of choice for both academicians and new companies developing computer systems. Vendors that use it as the operating system for a hard-ware platform tailor Unix to suit heir own needs. Usually this tai-



Unix is composed of a set of tools and applications that run on too of a base, or kernel, that handles the low-level functions. The tai loring inside the kernel would not be readily visible to users even though it may be extensive.

For example, Unix is notori ous for having a file system that is hard to repair and maintain Thus, some vendors completely rewrite the file system interna in hope of improving their may ket edge and the stability of their system. While that vendor's sysm may be better, the result i that Unix often becomes a label on a set of services that appea to be the same to the user but are in fact very different insid The University of California

Systems administrators must take the reins

Watch out for those superusers

Unix security — a contradiction in terms?

at Berkeley has become the center for much of the academic development that is now the basis for one of the two major versions of Unix available in the market — Unix Version 4.2. AT&T's Unix System V, whose latest release — Version 3.2, available since last fall — contains

ior improvements in security.
The Berkeley and AT&T yers ane perkeley and AT&T treations are similar in some ways, but they are diffe-ent enough to cause confusion. While many of the basic tools are the same, there are enough significant differences to warrant a purtitioning of the market. Some vendors have chosen System V. and others have chosen 4.2. Not all of the apstions running on one system run on

The industry has recognized these

problems and has, for this and other reasons, tried to organize a "standard" Unix. There are competing organizations trying to create the standard Unix, including the Open Software Foundation (OSF), Unix International, Inc., the Institute of Electrical and Electronics Engineers (IEEE) in ociation with the National Institute of Standards and Technology (NIST) and X/Open Consortium Ltd. The hope is that standardization will help make the operating system more consistent and thus

more secure As the standardization and security As the standardization and security certification efforts heighten, more and more inspection of the development process and the structure of the actual code will be required. So far, the lack of develnent controls has created a potential

for undesirable code to reside within the system and to be difficult to find. But these weaknesses may also portend Unix's greatest strength: The op ating system's very openness and the scrutiny devoted to it will make it difficult for the bugs to remain in place forever. nce no single vendor has control over Unix, no single vendor can control or covor up the problems. Over the next few years, most of the unknowns in Unix opefully will be understood and repaired

The fact remains that Unix does have many security vulnerabilities that are well known to computer and network manag-These weaknesses are also well known to hackers, computer hobbyists and others who may be interested in testing their technological skills. They have easy access to published articles, Unix documentation and bulletin-board infor-

documentation and bulletin-board infor-mation sources on back doors into Unix. The Unix security problem is com-posed at Unix-specific and non-Unix-spe-cific elements. Unix-specific security risks are those that are inherent in the architecture of the operating system and therefore are not likely to disappear from most existing Unix systems in the near future. Included in this classification are the superuser" user category, which provides universal access, and the "setuid" and "setgid" systems calls. Non-Unix-specific security risks are

those associated with the normal usage of computer systems and software. On a Unix system, these can lead to great dam-

age because of how Unix functions. In cluded in this category are the risks in having enfauere contain back doors or Trojan horses as well as unsecured physi-cal locations where networks, computer rooms, terminals, tapes and disks can be accessed by unauthorized persons.

Unix-specific issues The inherent operating qualities of Unix create a vulnerability that opens the doors to some security attacks. For the Unix-proficient, these structures can be urized in the superuser, setuid and setsid functions. A user who becomes a setgio functions. A user was become a superuser is able to remove all the securi-ty barriers that exist within Unix. Thus, one problem deals with keeping unauthorized users from becoming unerpsers This problem is common to a variety of Unix systems and has a rather standard

Many of the tools and utilities in Unix need to change modes into superuser for a brief period of time in order to reach some service that the user has requested. This is done through the use of the setuid and setgid system calls. When properly executed, these place the program executing them into superuser status. In most cases, such programs are well debugged and there is little risk of decreasing the stability of the system. However, the existence of a mechanism that allows the granting of unlimited privileges to some programs can easily be exploited. The exitation can occur through poor design or through maliciousness. There are many documented cases of poorly



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sed programs being run in mode and creating inadver-

In one case, an administrator wrote a program that, among other things, allowed users to other things, allowed users to store information in certain privileged directories. The program used a file, itself in a privileged directory, to control the directo-ries that were to be written into. Unfortunately, the file contained an entry for its own directory, A user saw this and rewrote the entire file, giving himself the ability to write into any directory in the system. Were be mali-cious, be could easily have placed viruses, Trojan horses, back

doors or other programs in any system or user directory. Thus, any program capable of reaching superuser status needs to be carefully managed and certified. In an environment that is open and free, what often hapopen and free, what often hap-pens instead is that software can be passed from one machine to another without proper certifi-cation. In one experiment, a re-searcher gave one such mail-

searcher gave one such mati-ciously designed program to a nonprivileged Unix installation user and observed its migration to the status of a privileged pro-gram within a few days. No Software travels quickly, and seemingly useful obtware trav-els even some quickly. Than, Unix can be suffigurated, it is more difficult to ensure that the procedure around the sufficient of the thing of the sufficient of the sufficient to more difficult to ensure that the procedure around Unix will act with oole around Unix will act with

Non-Units reportfit issues
This scenario leads to the non-line relative layers of security.

The law relative layers of security, the law relative layers of security of a stacking a computer system — a Trajan horse two types of attacks of the law relative law rela

was mented to do. These Tro-jus horse programs have caused a variety of damage, ranging from corrupting files to surrepti-tiously sending files across a net-work to someone who otherwise would not have access to the transferred file.

A back door is similar to a Trojan horse except that it is a piece of code that is left behind to pece of code that is left behind to be triggered by an outside agent. The person who inserted the back door activates the code. Once activated, it responds to the commands of the intruder.

Once activates, it responses the commands of the intruder. The Internet virus in the Unix E-mail system allegedly came in through such a back door.

In Unix, these and similar attacks pose special dangers because, by judicious manipulation,

user and gain access to anything in the machine. These unsophis-ticated computer attacks can be very effective in Unix, more so than in some other systems.

Other openings In addition to externally pro-duced Trojan horses and back doors, two mechanisms within Unix are important to security. When users enter a command in

Unix, the system searches for the program named by that comed along a search list of name defined by the variable
"PATH." If this search list is altered in some fashion, everyday users can be invoking Trojan horse programs that are disguised to look like standard pro-

grams. In general, PATH is set up to search through a standard set of directories for the pro-

gram If PATH is altered to search through a directory that has not been allocated privileged status and does not belong to the user typing commands, then any program placed in that directory could be chosen before the stan-dard program. Thus, one alteration to PATH can lead to an endless set of bogus programs.

A security audit product cur-

curity of the system being audit ed has been breached. The secu rity audit program masquers rity audit program masquerades as the common utility "ls." When "ls" is invoked, a security audit is done in addition to the normal work "ls" usually per-forms. While this use of the mechanism is for security reasons, other uses may not be for that purpose. Ensuring that

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The second major security oncern found within Unix is the connection of the system to the network. Unix systems, by and large, tend to be connected to networks. However, besides their valuable use as user and data connectors, networks can also be thought of as vehicles for

PATH is not altered can control accidental triggering of mali-cious programs.

The second major security allow it to become part of the growing community of network users within the industry. The Unix-to-Unix Copy Program is one such mechanism that allows the system to send and receive mad and script files from users on other systems.

In addition, network file sys-

tems represent another threat by requiring users to reach across the network for their file systems. This intimate link be-tween users and their file systems can potentially be more easily intercepted than when this communication takes place within a single internal system.

The network in effect outs the

Unix system out in the open, where it may be more vulnerable

Network connectivity also creates a need for adequate physical security. Many precautions must be taken to provide enough security for a Unix sys-tem just as for any other system. While Unix's physical security requirements are no differe from any other system, the availability of ways to connect to Continued on page 92

Hindsight

he history of U has had a sign AT&T created the op

erating system for internal open and accessible to the user and to the systems developer. AT&T has continged to evolve its own version of Unix.

In the early 1970s, af-ter AT&T released Unix to the world at large, the aced it as the best too for systems and softwar experimentation. In th

Unix became the prima vehicle for development. Students cut their con puting teeth on Unix as came aware of its from and vulnerability tions and vulnerabilities. In fact, as an undergradu-ate at Harvard University, Robert T. Morris Jr., the person accused of orchet-trating the Internet virus attack, was viewe

vard's computer staff resident Unix expert. Hackers and serio searchers — some, uner-the same person — spent years making Unix a flexi-ble tool with countless util-ities. Unix became part of the network of academic the network of academic and government comput-ers that provided much of the technology now being deployed in industry. Unix was an open structure within a single site as well as open nationwide when sed through a net

The people contribut-ing code to Unix and its is were from a variety toos were from a variety of organitations around the country. They did not share a single set of management goals but had a variety of technology-extending goals. Some raised accurity issues, but these

and FRED ENGEL

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m of N

O 1989 Rocar Militar

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As technology has changed from mainframe to mini to micro—and as lowcost computer-to-computer communications has become a reality, these professionals have adopted the new technologies in a never-ending effort to keep their corporate information systems current. And they have relied on Computerworld to keep them abreast of the incredibly rapid changes that have characterized this business since the beginning. It doay, Computerworld has a total audience of more than 600,000 computer professionals (ABC-audited), And it is truly the newspaper of record for information systems management.

To put everything in perspective, we have taken a brief look at where this young industry has been and how it is doing right now. It's all shown in the poster pictured here. Life size, it's 26" by 38", and it's full of interesting information on the new Information Age.



This poster gives you a great opportunity to stop for a second and look at the forest instead of the trees. And if you're involved in marketing or promoting computer products or services, we'll be happy to give you a free copy for your wall.

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The Newspaper of Record for Information Systems

An IDG Communications Publication

Unix security

other systems over the network, local or worldwide, makes physical security harder to achieve than with other systems of lesser capability.

Securing Unix While it may appear that Unix users are without protection, that is not the case at all. While Unix is not as strong as many information security would like, newer versions of Unix have improved security, and additional tools are available to make Unix more secure. There are also future developments that will increase the case developments that will increase the case

of security management.

Systems using Unix can be better protected. Yet, they are only as secure as their systems administrators allow them to be (see story next page). The security of any operating system can be attributed directly to how well that system has been

administratively reviewed and secured.

Brand set up accounts, create passworts, and new software to the systems and give access rights to various precise data. The dynamics of administering a system dictate ongoing change in the accounts, files and programs. Without careful and deliberate execution, the best automated mechanisms can be subverted. Beyond the system administrators, the

Beyond the system administrators, the vendors of systems with known weakmoses also have responsibilities to pay more attention to system security. They more attention to system security and passed to provide information and placs on timely patches to their conteners when boles are discovered in their systems. They will have to work to increase their systems' security to stem lost sales opportunities as well as to prevent potential tawatis, which, even if unsuccosful, can

become public relations sightnesses.

While there any out always be enough pressure put on venders abody by corpopersonary put on venders abody by corpoand the public
The current conflict over standards directly affects by this security, and that is what links the vender community with a value links the vender community with a major stake in Units accurity, C'the government purchased \$1.93 billion worth of bulks systems in 1968, with approximate-fense agency.) According to recent public billion of property of the community of the public public property of the community of th

Recently, in response to the latest outbreak of computer viruses, the Defense Department formed the Computer Emergency Response Team (CERT). CERT is HILE UNIX IS NOT as strong as many in information security would like, newer versions of Unix have improved security, and additional tools are available to make Unix more security.

fly to federal sites around the nation to asuast in lighting viruses. Last December, [Just/Group, the Units trade association, applicated the establishment of CER* association, applicated the establishment of CER* association, applicated these government efforts by agreeing on standard procedures for dealing, with emergencies such as viruses. The user group recommended considering the best way to disseminate informaing the best way to disseminate informa-

tion when computer networks are artificially congested through viruses or other ion, exceptional network problems. and The government also supports Unix stry security improvements through its testton in the conducts. In the 1984, the Netional

The government also susports Unix sect sections of the procedures. In late 1986, the National Security Agency's National Computer Security Agency's National Computer Security Center studied a prototype secure year system derived from AT&T's Unix System V. Release 2. The study assigned that the

system with the B2-level of assurance requirements defined in the Trusted Computer System Evaluation Criteria (TCSEC). The study concluded that it is possible to build a B2, B3 or A1 system with an interface very much like that of Unit, However, it also concluded that riajor problems exist with today's common Unix implementations.

Unix implementations. Fortunately, vendors have started to respond to the government's security concerns. Several firms have announced secure versions of Unix to help them capture contracts with organizations such as aerospace companies. The Department of Defense issued Directive \$200.28 last year, requiring that by 1992 wirtually all multiuser computer systems meet at least the C2 level of the TCSEC. This level

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UN

provides for need-to-know protection, au-dit canability and user accountability. Cerors have announced that they are seeking even higher levels of security.

AT&T's next release of Unix is expected to have C2-level security features

In addition, the Department of Con-erce's NIST, which develops standards for the civilian agencies of the federal gov ernment and interfaces with the private sector, has a Unix security project. Posix is concerned with security standards efforts associated with IEEE P1003.6. which is an interface-specific standard. The objectives and scope of this effort are to establish functional interface standards stent with but not limited by the TCSEC. Elements for Posix will include

basic security mechanisms, discretionary

access controls, auditability mech

and nondiscretionary access controls.

Without a doubt, Unix security will imove over time. How it will improve and the costs involved in increase are less certain. Those decisions await the e less certam. I nose necisions await me sh of an organized IS community. IS has a major stake in improving Unix is has a major sease in improving o ma-security, but only such that the security serves other IS needs. If upgrading Unix security interferes with information flow or complicates network management, it will continue to receive insufficient atten-

tion. A balance between production and protection will have to be addressed. IS managers have an absolute right to impress upon vendors their interest in se-curity improvements within product lines. IS can also make it quite clear to the

Unix standards groups that these organiastions must agree on security as a priori-ty area, aside from their other disagree.

ments concerning standards.

Finally, IS can advise and work with
the government to define the security needs of the private sector. Firms should get into both the definition and decision loops at this time or be prepared to stand ound and complain after some very es-ntial decisions have been made. By that me, it may be too late to do very much.

The Internet virus attack brought Unix security problems out into the open. froncally, the strack took place while ma-ior efforts were already under way to improve the security of this operating sys-tem. Eventually, secure Unix may no nger be a contradiction in terms. •

A security checklist

rtain passwords. A checklist of e curity activities for s

trators includes the folic

Follow installation rule
Pollow configuration r

Enforce password len

· Limit access to privileged po words.
• Follow vendor rec

port of the attack by E ce at Pur ne of tho

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COMPUTER INDUSTRY

INDUSTRY INSIGHT Nell Margolis

Traveling in vicious circles



ness Software Technology (BST) isn't one ometimes, even BST pro-If BST proves smart enough to attain the visibility it wants,

vestors and the press will probthat has hoved in Microsoft and would have prevented its rise if itted on the way up. Earlier this month, micro

ter software market leadrosoft stunned the industry with the news that delays in Microsoft Word word processing enhancements would knock the company's third-quarter revenue below projected levels. Wall Street panicked. Stock

nd, no doubt, a few folks at otus laughed. Last fall, product ipment delays caused Lotus, ice the leader of its pack, to suffer stock decimation, press castigation and precious little sthy from archcompetitor

What goes around comes round. But what's going around insidious, and most leading caught a dose of it recently. It's a strain of Vicious Circle Synome, and its symptoms are all

Impressive products power a company to the front ranks of its market niche. Competition nts. Price wars threaten. The clarion cry sounds from the ncreasingly sophisticated and emanding user community: What have you done for me tely?" The press and the fiancial analysts take up the

rushes to announce a nifty new product. Inquiring minds want to know exactly when it will ship. inned, the company names a arget date. In an overwhelmi er of cases, the com is accurate on two out of three scores. The product is new. It's fty. What it isn't is ready, and, hat's more, odds are that it Continued on page 38

Japanese say: Buy, buy MIS American pie

Fuitsu Ltd., NEC Corp. and Hitachi Ltd. — the three key Japanese computer makers - are flexing their muscles to pick up a bigger piece of the lu-crative U.S. MIS market this year. Among their ef-forts are the following: • Converting U.S.-developed mainframe software to run on Japanese ma-

 Expanding production of personal computers, in-cluding Unix models. • Rolling out a 20 billion floating-point operations per second (GFLOPS) su-

percomputer.
• Intensifying marketing pro-grams in an effort to "American-ize."

Japan's three top computer com-panies prompts longtime Japan watcher George Lindamood at Gartner Group, Inc. to comment that "American computer com-nanies [could] get killed in the



er regards the moves by Japan computer companies as evolu-tionary. "It'll be a while before they crack the Fortune 1,000 market," said Michael Geran, an analyst at Nikko Securities Co. n New York. "There's still a software lock on [most] propri-

There's not brand-name ognition, and their distribu-methods are indirect."

orcing the Ispanese companies to set up plants in the U.S., said indamood, industry services

also more goodwill in the eyes of the U.S., he said. pan's growing compute efforts in 1972 for the U.S.

merce.
The stakes could get higher, judging by the ambitions of the players.
"We're acrapping for the fourth position," said

at NEC's Entry Systems Div

Ask CEO/founder quits to publish her story

BY J. A. SAVAGE

MOUNTAIN VIEW, CAR. Sandra L. Kurtzig, one of the few sale chief executive officers in the computer industry, resigned last month from Ask Computer Systems, Inc. Systems, Inc., the company she has nurtured for 17 years, to write a book. It's about a female CEO who spent 17 years nurtur-Kurtzig quit Ask, a maker of software for Hewlett-Packard Co. and Digital Equipment Corp.

co. and Digital Equipment Corp. platforms and a value-added re-seller for HP and DEC, so she could recount her story in print rather than on the lecture circuit. "People can read the book, so I don't have to travel," she

said. While some working CEOs publish books, Kurtuig felt she had to leave Ask before she could write. "I had to separate my emotional feelings [from Ask]. It is like a fold—at some point you have to say the child is grown up," she said. Since the firm's maturation more than five

years ago, Kurtzig said she has taken a primarily hands-off role toward the company she co-founded in the early 1970s. Telling the story of her com-pany is part of her contribution to society. Working at a soup kitchen is not Kurtzig's chosen orans of commany service; her forte is encouraging entrepre-neurship. "If I can give anything to society — a lot more than a community fund or anything like that — it would be if I can inspire five successful companies," she

tarting Ask with no venture spital, Kurtzig became a pencil sunter. "I learned from my fa-ner that you don't spend what ou don't have," she explained. hus, she encourages other en-represeurs to start lean to sur-

"There's too much venture pital in the Silicon Valley," rtzig said. "You've got to take its, and if you're starting with



Kurtnig thinks boards of direturning times observes of the ctors are the antithesis of the ik-takers needed to lead com-nies. "I don't do boards or win-ges well," she said. "Very little accomplished in the board-

accomplished in the board-on. Today's society is so liti-us, boards react by [doing thing]. If it's not broke, don't

Buy, buy

computer retail chains. "In the last three years, we've grown 1,200%," Miller said. While Miller acknowledges While Miller acknowledges that "getting to be an IBM is not something you do in 10 min-utes," he said the NEC division aims to leverage the comm



miconductors, communica-ns products and computers tons products and computers, including supercomputers, NEC Corp. expects to debut a 20-GFLOPS model this spring that will be sold through its partnership with the recently renamed Bull H. N. Information Systems, Inc. in Billerica, Mass.

Then too, between \$2.5 bil-ion and \$3.5 billion is being ured into operating synt software development, a project that targets MS-DOS, OS/2 and

"Unix is the game of starting over," said NEC Business Sys-tems marketing director Jeff Herrmann, who is drafting a mid-

ge strategy based on that tiuser platform. "We can get market share in an almost new market." He added that it is a market with an estimated 33% annual growth rate, from a value of \$4.5 billion in 1987.

Herrmann and Miller each stressed that they are not under any illusions. "The company can't do it all at once," Miller said. "You have to walk before

MOUTH IN Gerry Boudrezu, marketing and business planning director of Hitachi's Computer Division in San Bruno, Calif., also used those words to describe his company's efforts in the U.S. The division markets software, workstations mainframes and peripherals

chi's Arne Hitechi's Americanization ers to be the most conservative of the Japanese conglomerates in the computer business, Hitachi is learning to do business counter to its traditions. Bou dreau calls the process "Ameri-

Japanese companies, be said, view sales and marketing as a single function. "The American only wants to sell or only to mar-let, not to do both," Boudreau said. So at Hitachi, Boudreau has separated sales and marketing and pushed his staff to work more closely with customers. In

engineers.

Only after Japanese compu-nies changed their approach to the U.S. market, creating indi-vidual marketing positions, fid they experience an uptick in

AT&T shifts gears with new unit

Boudreau, who started at Hita-cha in November after five years at Fujitsu America. "We're three to four years

behind in Americanizing our process, Boudreau said. "Toshiba is two to three years behind. Fu-jitsu and NEC are all the way Americanized." Hitachi, he said, is "a \$50 billion corporation with

is "a \$50 billion corporation with on marketing people."

Of Hitachi Japan's corporate revenue, Boudresu said, 9% is spent on research and develop-ment. Of that, 33% goes toward designing products for the infor-mation technology segment of the company. "It's the fastest growing and most profitable of Hirachi's divisions," be said.

The company's U.S. sales are costly to OEMs, with about 80% to Fortune 500 U.S. computer companies that sell to For-tune 1,000 accounts, Boudreau said. He said he intends to diversify that sales focus to include distributors that sell to smaller accounts. "It's so our eggs

aren't all in one basket." he said. A second 1989 market push by Hitachi is expected with a PC called Hitfile, s Unix-based ATcompatible machine that Bou-

American aims

strategies for 1989

NEC Corp.

dress described as an image workstation for document re-trieval that will be aimed initially at the medical and computer-aidnounced in the months," Gluck said

ed design and man Also in the pipeline is a color aptop that made its debut earlier his year in Japan and that Bou-tress hopes to bring to the U.S. the end of this year

All of this activity is so na ox uma acturry is separate from Hitachi's recently an-nounced deal to join Electronic Data Systems Corp. in buying National Advanced Systems, which selfs Hitachi mainframes in the U.S., from National Semi-

nductor Corp.
Fresh from settlement of the copyright infringement suit brought against it by IBM, Fu-jitsu plans to augment efforts be-gun last fall to modify U.S.-written software to non on its

According to Mike Gluck, se-According to Muse Grack, se-nior sales and marketing vice-president of Fujitsu America's Computer Products Division in San Jose, Calif., the mainframe sive campaign. "It's just being formed and will be formally an

U.S. production of its modems car telephones and disk driver "The OEM peripherals business is changing because of PCs and the growth of networks," Gluck said. U.S. operations of Japanese computer makers detail individual

Fujitau Ltd.

Fujitau Systems Engineering of America is modifying America activare for export to Japan, while peripherals units target a brated distributors for advanced products That, in turn, is forcing a change in Fujitsu's distribution plans. To date, Funtsu has estab-lished 10 high-tech distributors

as a result of a program pioneer-ed five years ago. It is aimed at VARs with a high level of techni-NEC Information Systems aims to continue boosting PC sales cal competence that are targeted to sell more advanced prod-

"It's been a good marriage of American creativity and market-ing ideas and Japanese manufacturing and engineering."

Last fall, the corporate parent tablished Fujitsu Systems En-neering of America, Inc. in unta Clara, Calif., to modify

NEC's Mille

U.S. software for use on Fujitsu computers in Japan, according to Yoshi Ichinose, president of the new division. The subsidiary has six programmers on staff, includ-ing two U.S. systems engineers.

At the lower end of the com-

puting spectrum, Fujitsu is fine-tuning its value-added reseller (VAR) strategy and cranking up

six to nine months, Hitachi will appoint product managers, be d: later, it will bring in design

and develop multiuser Unix systems, while the parent company introduces a 20 billion floating-point operations per second super-

dyne, which officially became part of AT&T last month. How-ever, AT&T is still determining exactly what products will come under the "data communications heading. Cortese

For example, the vendor has For example, the vendor has yet to determine whether X.25 pocket-switching equipment, which AT&T resells under an agreement with Telematics In-ternational, Inc., will come unr the jurisdiction of ATAT Paradyne or that of AT&T's sess Communications Ser

Telematics' equipment is parularly difficult to categorize, Cortese indicated, because it is d both for private networking and so the basis for AT&T ser. h as the rece nounced Private Packet Netmunications equipment world-wide, with a particular focus on the burgeoning overseas mar-ket, which is scheduled to grow at twice the rate of the U.S. mar-

One of the orga orders of business will be to inte-grate Paradyne communications equipment with AT&T's Unified Network Management Archi-

The new subsidiary will continue to support and service Par-adyne offerings as long as cus-tomers demand it. Mitcham emphasized. However, be did say that some products, such as moderns, would converge. AT&T's data communications alses and support staff of approximately 1,100 will be trained to ort Paradyne equip apport Paradyne equipment, ad Paradyne people will be ained to support AT&T equip-sent, Mitcham said. Mitcham would give on num-ers on the size of Paradyne's sles or R&D organizations prior

to the merger.



Reorganizing into small, autonomous groups vields AT&T Paradyne BY ELISABETH HORWITT

LARGO, Fin. — Seeking the product development and mar-lecting againty to compete more effectively with small, aggres-sive competitors, AT&T is reornizing into autonomous busins units that will target

ess units that will target pecific product niches, accord-ing to a company spokesman. The first such unit to be for-safty amounced under this new ten is AT&T Paradyse, a sub-diary that will have profit and see responsibility for data comtoss responsionity for data com-munications equipment from both AT&T and recently ac-quired Paradyne Corp.

The subsidiary will be headed by former Paradyne President Lobe Mitchen

which effectively reverses the move toward centralization that the company made in its last re-structuring in January 1986 — is a "strategic business concept that incorporates the decision making process into smaller or sections — not up top," said ph M. Cortene, division man-

ager of product marketing at AT&T Paradyne. AT&T Paradyse.

This will enable AT&T to make quicker decisions in terms of modifying product strategies and delivering enhancements to

Will con Will combine data lines The new business unit will com-bine the research and development, sales and support orga

Industry sources have ques-ioned AT&T's motive for ac-suring Paradyne, which suf-ereds net loss of more than \$40 million in fiscal 1985 and which es no new types of proc

ucts to its new owner, with the exception of the Pixnet channel extender line. Some overlap
While conceding that there is
"some overlap" between the
two vendors' products, Cortese
said that Paradyne products
bring additional capabilities to
the table such as high-speed multipoint link support in the Paradyne 3400 modem line.
"Novacht, US 8 ture, according to Mit The new subsidiary v

extensive international market ing capabilities and additiona manufacturing facilities. Their expertise complex ments ours Cortese said. The new unit's main n is to sell and support data com-

"Paradyne brought us a rong set of additional re-

ong set of additional re-cross such as increased R&D.

NICKELS

Infotron Systems Corp. announced revenue for the year ended Dec. 31 of \$94.7 million, compared with \$83.3 milion last year. Net income was \$4 million, or 78 cents per share, compared with a loss of \$10.9 million, or \$2.15 per share.

in the previous year. Revenue for the fourth quarter was \$25.1 million, compared with \$24.3 mil-323.1 mason, compared with \$24.3 ma-tion in the fourth quarter of last year. Net income was \$1.2 million, or 22 cents per share, compared with a net loss of \$8.7 million, or \$1.70 per share, in the like peried a year ago.

Rabbit Software Corp. announced revenue for 1988 of \$10.3 million, compared with \$5.6 million in the previous year. Net loss was \$5 million, or 36 cents per re, compared with a loss of \$4 million. or 31 cents per share, a year ago,

Memorex Telex N.V. reported revenue for the third quarter ended Dec. 31 of \$604.6 million, compared with \$370.1 million for the like period a year ago. Profits were \$23.4 million, or 62 cents per share, compared with \$11.6 million, or 37 cents per share, one year ago.

Telco Systems Corp. announced revenue for the second quarter ended Peb. 26 of \$18.6 million, compared with \$14.8 swift on this previous year. Profits were \$407,000, or 5 cents per share, com-pared with \$103,000, or 1 cent per share, a vear ago.

EXECUTIVE CORNER

Geac Computer Corp., parent company of Vista Financial Systems, Inc. in St. Louis, has announced the appointment of Ste-fan R. Bothe as president and chief executive officer

Most recently, Bothe was president of the Application Products Division at New York-based Computer Associates Inter-

Edward Kaniger, senior vice-president of Avnet, Inc., was appointed president of Hamilton/Avnet. The company is Avnet's largest unit and includes Hamilton/Avnet mputer, its computer products sector.

Execucom Systems Corp. has appointed Bill Arkell managing director of the newly organized development in the UK. Execucom, headquartered in Austin, Texas, develops and markets busi productivity software.

Corvus Systems, Inc. amounced the ap-pointment of Timothy R. Larkin as president, CEO and member of the board

ot directors.

Larkin, previously employed by Accolade, Inc., a publisher of entertainment
software, replaces Joseph W. Rooney,
who has been president and CEO since
June 1988.

John E. Gates has been appointed president and CEO of Affiliated Computer Systems. Prior to joining Affiliated, Getes had served as national practice director nts at Peat Marwick Main &

DIMES

Aldus Corp. reported rev million and net income of \$14.6 million for its fiscal year ending Dec. 31, compared with revenue of \$39.5 million and net in-come of \$7.8 million in 1987. Earnings o7. Earnings ared with 86

come of \$7.8 million in 1987. Earnings per share was \$1.15, conagred with 66 cents in the previous year. Revenue for the fourth quarter was \$23.6 million, a \$2% increase over the \$12.3 million, a \$2% increase over the \$12.3 million, reported in the fourth quarter last year. Profits were \$4.3 million, or 34 cents per share, compared with \$2.2 million, or 18 cents per share, in the same million, or 18 cents per share, in the same period a year ago.

Dell Computer Corp. announced reve-

nue for the year ended Jan. 27 of \$257.8 million, compared with \$159 million for like period last year. Profits were \$14.4 million, or 80 cents per share, compared with \$9.4 million, or 72 cents per share, a

year ago.

Revenue for the fourth quarter was \$80.1 million, compared with \$48.9 mil-

Profits were \$3.3 million, or 17 cents per share, compared with \$3.2 million, or 21 cents per share, in the like period a

year ago. Network Systems Corp. announced unsudited results for the year ended Dec.
31. Net income for the 12-month period was \$11.4 million, or 39 cents over share. was \$11.4 million, or 39 cents per share on revenue of \$131.5 million, compares

with last year's net income of \$17.5 mil-lion, or 60 cents per share, on revenue of \$120.5 million. For the fourth quarter, revenue was \$36.2 million, up slightly from revenue of \$35.9 million for the comparable 1987

Net income for the quarter was \$1.4 million. In the fourth quarter last year, million. In the fourth quarter last year the company's net income was \$5.6 mil

Comnet Corp. reported revenue for the third quarter ended Dec. 31 of \$10.8 million, compared with \$9.5 million a year ago. Profits were \$51,000, or 2 cents per share, compared with \$28,000, or 11 cents per share, in the like period a year



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Japan vendors to pay on dumped chips

BY NELL MARGOLIS

WASHINGTON, D.C. - Leading Japanese manufacturers will soon be paying antidumping duties in the wake of the antidumping duties in the wake of the U.S. International Trade Commission's (ITC) decision last week in favor of a do-mestic vendor's petition to half dumping of 304-in. disks on the U.S. market. According to ITC industry analyst Thomas Sherman, importers affected by the decision will gay extra duties to U.S. Customs in the amount by which Customs calculates their prices fall below fair mar-

ket value. As determined in an earlier stage of the investigation, such amounts, called "weighted-average margin per-centages," add up to 51% for Sony Corp., 27.7% for Hitachi Maxell Ltd., 50.5% for Fuji Photo Film Co. and 43% for all oth-

Last March, Charlotte, N.C.-based Verbatim Corp., a wholly owned subsid-iary of Eastman Kodak Co., filed a petition on behalf of itself and other U.S. disk suppliers contending that microdisks and re-lated media made in Japan were being sold in the U.S. below fair market value. Last month, following a lengthy inves-

tigation and a hearing, the ITC decided that Verbatim was right. that Verbatim was right.

Last week, in a 4-to-1 decision, the ITC determined that Japan's dumping was causing or threatening to cause material injury to a U.S. industry.

The demage done Verbatim Chief Executive Officer Richard Bourns said be was gratified by the ITC

bourns said the was graumed by the 110 finding but not surprised.

Japanese disk dumping, be said, left "a trail of damage." He cited one company that filed for Chapter 11 bankruptcy pro-tection and another example in which a

company was forced to sell itself. Verba-tim, Bourns said, "went through severe layeffs and had to shift some masufactur-ing of our lines offshore because obviously we wanted to continue to compete." addition to revising its manufacturing strategy, Bourns said, Verbatim "was prevented from supporting the American

onomy."
According to the ITC tally, 11 co According to the ITC tally, 11 compa-nies in six states — California, Massachu-setts, Arizona, Oklahoma, Nebraska and South Dakota — make up the domestic microfloppy disk industry. "I think [the ruling] will be well re-ceived by customers," Bourns said. "It will bring about stabilization in the compa-

ny and allow us to increase our invest meet in research and development."

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about how changes in the informationbased corporation affect corporate nower and influence.

Michael Hammer of the Hammer Group, will address how systems management can best be applied in your corporation.

Donald Burr formerly of PEOPLExpress Airlines, will take a frank look at what goes right and wrong when applying technology.

To gain the knowledge you need to competitively position your company for tomorrow, reserve your seat now at this important meeting.

about Computerworld PERSPECTIVES 1989 before May 1 I've attached Leslie Price

PERSPECTIVES 1989 o Cudaback Strategic Framingham, MA 01701 or relephone beslie at (508) 875-5000

Margolis CONTINUED FROM PAGE 95

isn't going to be ready by the early tar-get date that the company spat out to qui-et the clamor.

Well, you say, they didn't have to

Well, you say, they didn't have to jump the gun with the announcement. Sure they did. Nobody was going to let them get away with saying. "Hey, we've got soo thing fine out there right now; we're working on something new and nifty, and you'll get it when we have it." Companies have tried that; they've been pilloried in the press and damaged on the Street. Honesty might be the best policy, but it akes the worst public relations, partic-arly in the superfast-track late-1980s technology market.

Companies recover from Vicious Cir-cle Syndrome but not without loss of momentum, morale and investor support
— all of which adds up to a drain on research and development, which hurts the users a lot more than it touches the

ess or the investors.

Microsoft will bounce back, probably sickly. Last week, however, a fair num aring longingly at BST.
BST is a 5-year-old venture-backed

BST is a 5-year-old venture-backed maker of change management software, a relatively new technology that helps software developers build products that can be easily altered, supported and maintained. Nice work if you can get it; BST says you can. Bot how many cusmers are going to listen to a startup indor in a pioneer niche. So BST brought in reinforcements.

est week, it announced agreements wit re software vendors that are using, wil

thre software vendors that are using, will endorse and, in several cases, will embed into their own well-known wares BST's flagship offering, Endewor. BST was tempted to release its news as soon as the firm of its powerful allies eigned on, a BST exec said. However, "If we had, the whole thing might have bock-fired," he said. Pearing that the overmred," he said. Fearing that the over-arching strategy would be missed if seria announcements created the impression of an unbalanced sizale-to-steak ratio, BST opted to wait until it could his the public with five visible boosters whose as gregate installed bases span a vast chunt of DST's beautiful. BST's target.

Lots of companies coust beneat a sinking like that. The irony is, lots of

IN BRIEF

See you in court The Information Consultin Group, Inc. (ICG), formed last for

Anderson & Co. 'a consulting divi-sion, hit the Big Eight giant with a \$300 million lawauit hast week. 'For four months,' IGG Chief Ex-ecutive Officer Greeham Brebach Jr. said, 'Anderson has waged a computing of false statements, coer-cion and unfair trade practices against IGG. It will not succeed."

More Big Eight

doings New York-bas brand and Boo

it's MAi's turn again

It's MAI's turn agains.

He on the hose of his conquery's declaration of a proxy bettle to unsent the board of directors of against the trapet Prime. Computer, line, and substitute its own sites, MAI Basic Four, Inc.*a Sement LeBow freed of a letter to Prime shareholders with a pledge: If MAI was the proxy fight and a boas field white length top MAI's \$200 periods of the prime within 30 periods. MAI will be the state of the board
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nerica, a subsidiary of the Japase electronics behemoth Matusita Electric Industrial Co. and
rent of such household names as
nanonic. Technics and Quasar,
t week announced that Richard

ose, Calif.-based disk dri r Prism Corp. amount signation of President Day

Ask CEO

CONTINUED FROM PAGE 95

be offering hugs and matrimonial advice, Kurtzig noted, they can still foster a cooptive atmosphere. "The CEO is the most important is-

edient in the chemistry of a company." gredent in the chemistry of a company, she said. Ronald Braniff, Ask's current CEO, perpetuates Kurtsig'a nonconspetitive style, according to vice-president of re-search and development Martin Brown. But the extremely personal style of Kurt-sig's snanagement is not, and cannot be, perpetuated because the company has

Although Ask has been run by a woman

for 17 years sues have tak-en a backseat

to stockholder

itting she

outs for itale entrepreneurs, Kurtzig has spent
out of her working life downplaying any
minism. She didn't quit to have a family
ber two boys are nearly grown. — her two boys are nearly grown. Furthermore, Kurting estimated that 50% of Aik's staff is female, yet there are no women in top management. There is no day-care center at the company's customized seven-story office building because, she said, "Child care centers entail

HILE ADMITTING she has been a role model for female entrepreneurs, Kurtzig has spent most of her working life downplaying any feminism.

> a lot of liability, and you have to separate being a businessperson from being a woman. At this point, it's not in the best woman. At this point, it's not in the best interest of the shareholder."
>
> Kurtzig said she does not expect to stay away from running a business for long. "I'm open to opportunity. I might not start another company, but I might take over a company, it's much easier to make the second million than the first."

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likes what he sees.

He also likes the fact that kint year the company enjoyed a 90 percent jump in sales over 1966. Bob says this success comes from positioning a quality product in the right place at the right time in a dynamic market place. And the right place for ad-

vertising, he explains, is Computer-

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COMPUTER CAREERS

Test MBA programs for reality

In sizing up business schools, look for real-world contact and simulation

*BY PATRICIA CARLSON and JAMES C. WETHERBE



technical educa MRA graduates concentrating in MIS is no longer an issue. What cor porations are focusing on now is getting the best communicators and salesmen from among these graduates The companies that here MIS

MBAs want people who can bridge the gap between business nrohlems in functional areas and technology that can help solve those problems.

Some organizations are starting to here MBA graduates who have concentrated in fields such as marketing to help ensure that they get people with the ability unicate and sell ideas effectively. Other organizations are using personality tests and batteries of interviews to eliminate MIS MBAs who reflect a technical rather than a human relations outlook on what man-

agement is all about. Such developments mean that schools will need to develop the people skills of their MIS MBA students. At the same ime employers and prospective students should seek out progressive schools that take this di-

How can future MIS MBAs and the companies that will hire them identify the schools where these people skills will be fortered? The answer comes in part from half a dozen MIS executives at the vice-president level Fortune 100 companies These executives were asked through in-depth telephone interviews to suppost ways in

which college and university

business schools could enhance the managerial savvy of their ness experience helps All the participants said that business experience prior to graduate school provides the ideal preparation for effective

Short of this experience, er, the executives described several other approaches that can help MBA programs develop business-oriented MIS graduates. Prospective MBA students and employers hiring MIS MBAs should check wheth-

er programs conform with these suggestions. They are: · Teamwork. This practice is difficult to develop in the traditional classroom setting, where students are encouraged to com

from scratch — they are new for every student each semester. most business problem have aiready involved others. To work demanded of MIS MBAs better reflect the problems that requires teamwork. Busin these other people may have inschools must, therefore, take troduced students in accounting

steps to accommodate this requirement with grading scher that make the success of individunle dependent in ourt on team Role playing. Schools can teach reality by putting students in real-life situations. There is

CHOOLS CAN TEACH reality by putting students in real-life situations. There is nothing like being faced with an angry customer to make someone forget everything he has learned through conventional instruction.

nothing like being faced with an angry customer to make some one forget everything he has learned through conventional instruction. Such sessions can be videotaped and played back to provide an additional learning

· Project work, Students can be assigned to go to companies and gather information or conduct studies. Contact with any organizations can help the students learn that each has its own prior a not-for-profit outfit or a public titution such as the university

games in which each student is given a title and charge of certain functions of a company for a semester simulate the management world, exposing students to realistic situations. Harvard Business School is among the in-

Not-from-scratch work. Usual-

ly, classroom projects are done

classes, for example, might keep cusses, for example, might keep financial records for a fictitious

company and exchange books

with their colleagues at mid-se-

mester. There is nothing like

taking over a "messy" project to

· Computer games. Computer

get a taste of the real w

• Top Top management topics.
 Classes or seminars should be ected on leadership and pol icy. Leadership classes should ership from management and estrate how to lead. Instruction on policy should bring ther the lessons learned in

· Bring practitioners and stu dents together regularly. Practitioners should be brought into the classroom to reinforce the sense of reality, and organiza-tions should be encouraged to undertake other programs to bridge the gap between students

Other efforts to explore : Other efforts might include in ternships, which are good for the

organizations and the students. ships as a recruiting-mechanism. routinely hiring 50% or more of their interns. The programs give students the opportunity to see if there is a fit within the organiza tion and give the members of the organization a chance to look at

Organizations should also be encouraged to jour co-oo programs, in which students work thile continuing with school They also should be encouraged to offer summer jobs to promis

ing students Approaches such as the or recommended by the top MIS
executives will bein balance the education of those people aspir-ing to manage in a field with one foot in the world of bits and bytes stitutions that employ such and the other firmly planted on the corporate ladder.

> Carlson is a Ph.D. student of the Uni versity of Minnesota's School of Man gement and a research assistant at its and countries Blathambara a sec former Af MIS at the necessary and the sector of the conten

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Our requirements include 5 years experience in the software development process as well as experience with menufacturing land/or purchasing systems. A BS in Computer Science or

SR. SOFTWARE ANALYSTS/SOFTWARE ANALYSTS
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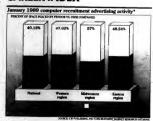
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formation in huge loose-leaf binders — tasks that might be done more efficiently with CD-ROM disks.

CD-ROM keeps rolling along

The technology advances, but users wait for critical applications

BY BARBARA SEHR

act disk/read-only memory (CD-ROM) technology continues to generate support from ware and software vendors that have been adopting standards and boosting output of disk drives and programs. However,

vendors need to do more to lure users who are looking for more critical applications and flexible technology Last year was a big one for CD-ROM, according to Robert Abraham, a market analyst at research firm Freeman Associates Inc. in Santa Barbara, Calif. More than 91,000 drives were

shipped in 1988, says Abraham, expects the number to jump 140,000 this year and 311.000 by 1992 In addition, general interest dications have been emerg-

ing. Microsoft Corp. began the trend with Bookshelf - an online style checker, quotation source. ZIP code directory and

statistical repository. The firm the technology rather than using followed up with an application development tool, the Program-mer's Library. Another advance is the use of

CD-ROM for software distril tion. Instead of a floppy disk drive for software, Digital Equip nt Corp.'s newly introdu Vaxstation 3100 comes with an optional on-board CD-ROM drive that can be used with third party software on the market. Despite these advances many users are sooting to more. Michael Alpert, a partner in the Montclair, N.J.-based account-ing firm Gross & Alpert, de-scribes himself as a technological

long before it becomes mature

However, accounting the ap-

ication that would be most use-

ful for him, is not available. Thus

much of his time on the CD-

ROM drive is spent exploring

others in his firm

it in his work

er front, a trial is in proess at Jeppesen Sanderson, an agiewood, Colo., firm that er. He is always one of the nakes up-to-date maps for air-nes. System analyst Gary L. rst to try a new technology, Porter wants to convert the company's mapping information, currently on tape, onto CD-ROM disks that could be read di-His own personal computer has a CD-ROM drive, and there are

rectly by computers aboard air-Despite apparent benefits of such a system, upper manage-ment at Jeppesen Sanderson is still trying to cost-justify the con-version. Because the maps must be revised every 28 to 56 days. the emergence of rewritable CD-ROM disks may spur a man ement decision for the green

light. Porter says. Porter adds that the co ny's managers could be further encouraged to approve the use the directories we use available on CD-ROM," Alpert says. "I'm of CD-ROM if they could find an on CD-ROM," Aspert says. "I'm afraid, however, it's "going to take some time." He still spends a lot of time leating through on-line directories available via mo-

The decision to invest in CD-ROM is driven in part by hard ware costs. Porter notes that the price of CD-ROM hardware is on a downward spiral typical of emerging technologies. "Our management knows that it won't cost them more money by wait-

ing," be says.
Freeman As this drop. In 1987, its report notes, drive prices were \$500 at the OEM level. In 1989, the price dropped to \$395 - about \$700 at the retail level. Analyst Abraham ultimately expects the prices to drop to \$250 — half

the 1987 level - by 1993. The real test of CD-ROM. owever, will continue to come in applications. Steve Sieck, vice-president of electronic services at Link Resources Corp. in

CD Rom

New York, says 869,300 d were shipped in 1988. For 1989, be expects the number to suma to three million. In 1992, he pro-jects that 34 million disks will be shipped to a total installed base

of 1.3 million CD-ROM drives.

The selection of tiples is also on the rise. Since the first title was introduced in 1985, the was introduced in 1985, the number has jumped to more than 450, says Landa Helgerson, pres-ident of market research firm Di-versified Data Research, Inc., in Falls Church, Va. Since January, 20 new titles have already bees added, she says.

Seltr is a free-lance writer based in Havward Calif.

Index CD flom .. Graphics Desk Top Pub Bels Proposals Real Essans

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TRAINING

Clueing in company leadership

Educating user management is linchpin in effective computer strategies

BY NAOMI KARTEN

In many organizations, managers are unaware of the resnor bilities associated with comput-Ignoring these responsibilities, however, can snell the difference between success and dieseter. Fulfilling them can determine whether computing can be used with confidence in making business decisions.

While hands-on users co trate on the mechanics of hardware and software, managers need education about the risks they face and the responsibilities they assume when their staff members become computer us-

s. Such an educational program can touch on a range of tonics. These include security, legal obligations, effective support services, selection of commuter-nonficient staff members, hardware and software acquisition, oetwork administration and data access policies. The level of detail may vary depending on the oature of the business and comput-

ing environment.
The following are topics appropriate to a management edu

The hidden costs of com-puting. For the uninitisted, computing seems to be filled

with surprise costs. This situstion makes it difficult for management to budget appropriate ly. A discussion of start-up and ongoing costs for equipment. installation, maintenance, staffing and training can help reduce the surprise element

and help managers prepare more realistic budgets. Two of the most frightening costs of end-user computing are difficult to translate into dollars and cents. The first cost relates to computer miture, such as the accidental deletion of a file. The second involves the cost of a bad decision generated by an applica

tion error or a misunderstanding of how a package works. In general, management must be encouraged to guard against wast-ed time while continuing to sunnort adequate training and practice.

Use and misuse of data. Examples drawn from relevant business applications can be used to demonstrate to management how easily users can generate erroneous results through the inadvertent misuse of data.

Data snafus can occur in several ways. One of the easiest is misinterpretation of what an element represents, such as the assumption that a sales figure represents a monthly total rather than an annual total.

Another data error ru comes from comparing fields that should be comparable but

are not because of a slight differ ence in definition. For example

Department A maintains project estimates in man-weeks and Department B maintains them in man-hours.

MANAGEMENT education program that addresses the organizational impact of computers can help management view the devices not just as word processing or spreadsheet machines but as keys-to the way work will be performed in the future.

A third and particularly common source of errors involves the application itself, such as when a decimal point is mis-placed or a calculation mis-keyed. The business implications of such errors can be easily highlighted through the use of

familiar examples.

Standards and controls. How-to's and how-not-to's are rampant in computing, and users often feel impeded by the number of guidelines and their apparent senselessness. Managers are more likely to support standards if they understand the reasoning behind the rules: why product standards have been established: master? What skills are nice, but why it is important to document not necessary? What is the opti applications; why data should be backed up, and equipment and data secured; and why various company sudelines exist and the potential impact of ignoring

It is also valuable to review the importance of having a consistent approach to computing from one day, staff member and application to the next.

Management needs to appre ciate the importance of delegat-

ing responsibilities. Such delega

tion means designated depart-

ment members are accountable

for various functions such as ner-

forming backups, updating data-

bases and providing software version control. With an aware-

ness of these responsibilities.

nanagers will be in a better posi-

tion to oversee computing in

Staffing consideration

ment look for in recruiting employees who will be given com-puter responsibilities? How can a department adequately plan for people backup as well as data Increasingly, 'Tepartments will need a mix of business and computer skills. This type of fo

is excellent for introducing and discussing some of these In addition, computers are changing the way businesses perform tasks. The flow of infor-mation within and between departments is gradually changing as computer technology makes it possible for more tasks to be per-

mum way to acquire these skills?

What attributes should manage

formed locally rather than by a central MIS group. management education program that addresses the or-gamizational impact of computers can help management view the devices not just as word processing or spreadsheet much but as kees to the way work will

be performed in the future.

Ultimately, the only way end user computing can succeed is through managers' taking re-sponsibility for the computing in their areas. Management education can be an important step in

Computing is changing the way this direction. people do and view their jobs

Thus, management needs guid-ance in thinking about a range of questions: What computer skills Karten is president of Karten Asso ciates in Randoleh Mass, and editor of the monthly negatisties "Managing End-User Competing.





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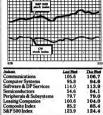
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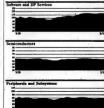
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Computerworld Stock Trading Summary







A costly tie

Chip contract battle is big news as Street awaits Round 2

0.00 - 0.

FCC ruling

dential and small-business cus-tomers, one for 800 service and one for all other services used by big businesses. Each basket has an average price ceiling that will be adjusted downward by 3% per

However, within the business sket. AT&T can increase or crease the price of individual services by up to 5%. An in-crease in one service must be off-set by a decrease in another ser-vice in order for AT&T to remain in compliance with the basket's swrage rate cap, the FCC explained.

Business users are worried hat AT&T will juggle its rates within the business basket in or-fer to raise prices on private uses, steering users to AT&T's switched services, Moir said,

ers," be said.

Fazzone said that although it remains to be seen how much strategic pricing: AT&T employs, users would have gotten more protection if the FCC had est three. Business groups had urged the FCC to create more baskets "They threw all business ser-vices, except 800 service, into one basket," he complained.

Why price caps?
Resumped FCC regulation of AT&T's long-distance rates
remones the current 12.2% profit criting and replaces it with a set of
price controls; the FCC justified its decision with this comparison

Old Similar to cost-plus constructing, since AT&T can recoup all costs from rategayers plus a 12-2% profit. This encourages ratepudding and inefficiency.
 Creates as incentive for AT&T to subsidize consequently business services. AT&T must boost A I a T must boost productivity by 20% just to maintain its current earnings levels. Efficiency and cost-cutting can result in higher profits.
 Separate business and

will prevent cross-subsidies. Formula will save ratepayers
 \$900 million over four years.

ential price baskets

AT&T could raise the price of cations Users Committee, for private lines 5% a year — a community wanted three business pound rate of 24% over four baskets for AT&T: one for s — and reduce the price of ed services, one for analog itched services 5% per year. private lines and one for other

Moir said, creating a price differ-ential of 48% after four years. Richard A. Fazzone, telecom-The new regulatory scheme, pet project of FCC Chairman nications affairs manager for Information Services, a Gen-GE Information Services, a Gen-eral Electric Co. unit based in Rockville, Md., expressed the same concern. "When you have broad baskets, you certainly know there is going to be some shilly to overprice some ser-vices and underprice the oth-ers." be said.

ced price ceilings on 15 or 20 skets of services rather than

Dennis R. Patrick during the last two years, encourages AT&T to trim costs and become more effi-cient in order to boost profits above the current 12.2% profit ceiling. Meanwhile, ratenavers are protected by the price conAT&T issued a statement supporting the price caps order but noted that it considers the services. He said be general opposes price floors, but mer bers of Congress are concerns scheme an interim step toward

eventual deregulation.

Patrick made several changes in his original proposal in order to mollify skeptics in Congress. to molify skeptics in Congress. For example, creating the spe-cial basket for residential ser-vices was intended to calm fears that residential users would pay for business discounts. In addition, Patrick said be re-

that AT&T could engage in predatory pricing that would unpredatory pricing that would un-fairly harm its competitors.

Patrick and Commissioner James H. Quello voted for the price caps order. Commissioner Patricis Diar Dennis concurred

Patricis Diaz Dennis concurred but expressed reservations about the complexity of the new regime. "Price caps for AT&T is a second-best solution that re-sults in more, not less, regula-tion," she said. in addition, Patrick and be re-luctantly agreed to the 5% floor on price decreases for individual

Behind the scenes

n order to implement the price cape rules, the FCC ordered AT &T to file new tarriffs May 17. Gerald Brock, their of the FCC's Common Carrier Bureau, said AT&T will take its Docember 1988 rutes and apply the 3% downward adjustment to the baskets of

The FCC arrived at the 3% figure by combin-ing AT&T's historical productivity factor of 2.5% with a 0.5% "consumer dividend." Conse-quently, Brock said, the AT&T rates that take effect July 1 are expected to be at least 0.5% lower in real terms (inflation-adjusted) than they would be under the current regulatory regime. However, business groups have argued that the 3% figure is too low and that current rates — the baseline for price caps — are too high (CW, March 61.

The FCC also decided that it will apply the price caps scheme to the local exchange carriers luly 1, 1990. Patrick said he is anyons to extend price caps to the local carriers, but it will take another year to calculate a productivity factor for the 1,400 telephone companies. Also, key members of Congress and consumer groups are skeptical that profit critings should be removed

for telephone companies with local monopolies. FCC officials said the price caps system, de-tailed in a forthcoming 500-page order, has the following additional features:

Prices can go below the 5% floor, but AT&T will be required to demonstrate that it has cov-ered its costs and is not engaged in predstory

pricing.

**The price caps achieme does not apply to AT&T Tariffs 12, 15 and 16, which provide upon call network services and discounts for business and government users. The customer-specific retriffs will be pladed on a case-by-cape basis.

**Carriers that atay within the price caps limits on will get a 16-by, streamlished review of their tariffs. Tariffs that fall out of the boundaries will be usuagesed and thoroughly invention will get a part of the price of the possible of the total price of the possible of the promptly invention will be usuagesed and thoroughly invention.

 The FCC will monitor carriers to ensure that cost-cutting efforts do not reduce the quality of service

IBM jacks up product, service prices by 5%

service.

• After three years of experience with price caps, the FCC will conduct a comprehensive review of the experiment and consider revising the 3% productivity factor. MITCHIBETTS

Procedure blamed in Hinsdale fire BY ELLIS BOOKER

The Illinois Commerce Commi sion (ICC) released its report re-cently on last year's fire at a and IU.C.) reasoned as report re-cently on his at you's fine at a challeng has tillness Bell's modes and challeng that Illinois Bell's modes and fire detection systems were sleguate but that a procedural inpar remarked in a 40-minute de-lay in alerting local forefighters. The blaze on May 8, 1986, disrupted telephone service to more than 500,000 business and residential customers in Chica-go Secultwooders mobards. BC and the Office of the State Fire Marrish, Irrord the origins of the fire and made general rec-ommendations for preventings

ommendations for preventing similar disasters. But it did not assess Illinois Bell's responsibi-ity for the event or its liability for

sation. Two days after the Hinsdale fire, be formally peti-tioned the ICC, requesting the tored remotely."

and public hearings.

Last year, the Illinois Circuit
Court dissensed a class-action
sait brought against Illinois Bell
over the Hinnishel for, citing the
limited liability that Illinois Bell,
attility, enjoys under state law.
Hartigan restated his demands following the report's release, which, he said, "confirms
that the transfer of the property of the confirms
that the confirms of the property of the confirms
that the confirmation of the property of the confirmation of the co

that the company's emergency procedures were inadequate." The ICC will schedule hearings

The ICC will schedule hearings on the matter this week.

The Hinstalic center acted as a hub office, supplying phoce service to 42,000 lead here as well as operating 118,000 local and long-distance trunks.

The Hinstalic facility typically was unmanned on weekends and monointeer from Binoso Bell 3 local and the Commonitor of from Binoso Bell 3 local and the Commonitor of from the Commonitor of the Commoni

for central offices not to be staffed during nonregular work hours and for alarms to be moni-

Even so, one of the ICC's recommendations is that fire alarm received by DARC be immedi ately sent to local fire departments and that, despite the pros-pect of false alarms, central office alarms ring in local fire de-

The Hinsdale fire began in the The Himsdale fire began in the late afternoon in an electrical power line, probably one that had been damaged two months earlier by technicians working on adjacent power lines, the ICC report concluded.

Once the fire began, burman error exacertated the problem when an illinois Bell network operators when an illinois Bell network operators when the problem when an illinois Bell network operators when the problem when the proble

other central offices, departed from established procedures and failed to call the local fire depart-ment in Hinadale immediately after noticing fire and power alarms coming from the remote

BY ROSEMARY HAMILTON .

IBM said late Friday it is biking prices on most IBM products and services by 5%. At the same time, the company said it ex-pects first-quarter earnings to

This is the second across-the I ms is the second across-color board increase announced by IBM in less than a year. In July 1988, the company instituted a 5% increase on most products after a "normal business review," the same reason cited for

view," the satus reasons to the last week's move.

IBM attributed lower profit expectations in the current quarter to technical problems that resulted in delayed shipments of sulted in delayed shipments of sulted in delayed shipments of sulted in the said. sinframes, a prob

now been corrected. Excluded from the price hikes were certain low-end systems

devices such as the 3380 and all maintenance contracts.

All products and services sanounced after Nov. 10 are excluded. Most notable on that sits are the new low-end 3090, the ESA-capable 4381 models and high-end Application System/400 models. Any products or services affected by price changes nince Nov. 10 are also excluded.

Castomers. who currently

Customers who currently have products on order need not worry about the increase as long as they receive their order within 90 days of last week's announcement, according to an IBM spokenman. Anything shipped after that time will cost 5% more.

The increase will go into ef-fect immediately for new orders under the one-time charge plan. Increases on rentals, lessing or

Bringing home the PC pays off

BY ALANJ. RYAN

It's Sunday night. Corporate ac-countant Joe Jones has work to finish before Monday, but he won't drive to his affect to do it. Instead, he turns on the personal computer his company helped him buy. Using his modem, Joe can access all of his work files.

Firms that augment their em her through discounts, interest-ree loans or partial funding, sive found that the advantages include a more computer-liter-ate work force, increased productivity and employees who do not feel chained to their desks.

Four years ago, such a pro gram was implemented at Rock-well International Corp. in Pittsburgh. To Insuch the program, the Rockwell MIS group defined a standard IBM Personal Comome use, said Jerry Smith.

Control Division.

Next, the group compared the price of that configuration with the price for a base home. With the price for a base home. PC. The group then offened employees the upgraded configuration for the price of a base unit.

In later years, Rockwell dropped that PC purchase programs but continued a program in which employees could by the PCs at low rates. They were able to finance the purchases for two versars at to distress.

o years at no interest.

A similar program has been offered at SPX Corp. in Musk-gon, Mich., said Richard Coch-rane, the firm's director of infor-mation services. There, uners were given the option to buy an IBM PC-compatible computer at substantial discounts — interest-free if they purchased a con-figuration selected by the company. The company conducted free software and hardware training classes for employees desks, and they are being used; they are not gathering dust," Smith noted, adding that having the same configuration both at

Firms that standardize on a PC configuration can get better rates from the dealer and offer

ing the same software packages.

The project at Rockwell, of-

Company asset: Joe Smith's family room Companies that assist employee PC purchases cits benefits on bos the bone and work fronts

errograms to emproyees, ei-ther. At Apple Computer, inc., for instance, there is a loan-to-own program. Employees can borrow an Apple system for one year, and ownership of the unit is transferred at the end of the

HP boosts Vectra's speed with dual-bus 386 models

BY J. A. SAVAGE

PALO ALTO, Calif. - Kicking PALO ALIO, CARL — Alcang its deaktop personal computer clock speed up to 20 MHz, Hew-lett-Packard Co. introduced four models last week of its Vectra QS/20 based ou Intel Corp.'s 386 processor. Except for the low-end Intel

Except for the low-end Intel 8006-based models, the Vectras all feature dual-bus architecture, including the IBM Personal Computer AT standard bus. HP is in the Enhanced Industry Standard Architecture (EISA) consortium, which is buttling IBM's Micro Channel Architecture. ture, and expects EISA's early implementation on top-perfor-mance PCs, which are not in the

QS/20 category. Marjorie Cannon, HP's Vec tra product manager, said she expects the current dual-bus

configuration to coexist with EISA for several years while EISA appears on systems using an lotel 80486 processor.

This is the second 80386 desktop for HP in the last six months. The earlier model, the QS/16, runs at 16 MHz. Other

20-MHz computers are in a tow-er configuration with a cache system and one extra I/O slot. "They've got to get the clock speed up in the whole line," said Jesnette Sill-Holeuno, an anylyst at research firm Infocorp. "They filled in a hole in their

product line The QS/20 can be configured with 16-M bytes of random-acnemory. It has three ma

orage shelves and seven I/O ota. The models range in price om \$4,495 for the basic Model with no hard disk to \$5,995 for the Model 100 with a 108M-

PC server

agement issues — a PC just is not adequate. If I had nothing here, I would absolutely go with a mini-based file server."

Owens-Corning Fiberglas

Corp. in Amarillo, Texas, is bypassing PC LANs completely be-

passing PC LANs completely be-cause of their cost. Price, performance when compared with a minicomputer has been the PC LAN server's attrongest selling point. "It would cost a lot to have different people assung-ing each individual network," and Paul Sunner, Owene-Coming's MIS supervisor. When Owene-Comparing inselements its

ning's MIS supervisor. When Owens-Corning implements its file server, it will be based on a minicomputer, Summer said. This runs counter to the con-ventional windom of a year ago, when industry punish predictal the rapid decine of midrange system demand as LANs moved o departmental computing

This is not the news PC ven-

Comdex/Spring '89, said John Dunkle, vice-president of Work Group Technology in Hamipton, N.H. Dunkle, who has been briefed by the major FC vendors on their plants for Control, and that most had plasmed to emphasize the performance advantages of their 33-44ft 366 FCs at LAN servers. "The like of the most of their standard of their sta ned has very little to do with a

LAN server," he said.

Dunkle added that companies such as Wyse Technology, Advanced Logic Research and Acer Technologies Corp. are now joining IBM in billing their topend PCs as LAN servers. According to Gary Stimac, vice-president president of systems engineering at Compaq, 25% of its PCs sold are used as LAN

"We are absolutely a LAN erver company," Stimsc said. le added that in most applicaons, especially processor-marve ones such as comput

ers will see no surge in LAN per-formance, according to Peter Krause, an engineer at LAN Ser

ual to the processor in assess-server performance. "It is extremely difficult for a ufacturer to put out a box mixed as a server as they've rested so much into their ex-ing product lines," Kratse

maid. Rick Hopfer, vice-president of Shearson Lehman American Express Co. 1s micro division. Will continue to use PCo as LAN servers. "PCo are adequate as LAN servers, if just depends on what you do with them," Hopfer maid. But he added that until Netware 386 is delivered; there will be no noticable improvement.





Acquisition to prompt axing

System Associates, Inc., a unit of Associates, Inc., a unit of Associates, Express Co. 2 Data Based Services Group, amounted the signing of an agreement to acquire McDonsell Description of the Systems Co. The acquisition will result in 1,000 lystofis, a spotentime said, reducing the size of the McDonsell Desgles information Systems Co. 1000 lystofis, a spotentime said, reducing the size of the McDonsell Desgles information Systems work force to approximately 3,000.

tion Systems, said the sase was one of many moves made in the past seven months to focus the direction and strengthen the competitive position of McDon-nell Douglas Information Sys-

tems."
The Health Systems completes McDonnell D

TRENDS

Page printers

t used to be that if you Slow but steady growth in popularity t used to be that if you wanted a faster, more versatile or higher quality anything, you had to roll up your sleeves and fig deep into the company coffers. Nowhere is there a better example of the erosion of that belief than

wo one without out to seel than to be common the common to the common to the common to the common to the time printer, nonimpact to proper printers are coughing income to the common to in the page printer market.

continuous to drop. A low-speed, continuous to drop. A low-speed miner an now be had for less than \$12,000. Although high-volume devices accounted for \$1\pm 0 fpage printers installed at IBM maniframe sites surveyed, as the high-quality, how-volume printer to costs out, so do consumers' error cost out, so do consumers' erro

an their offaces, but more than 90% of stuture printer purchases will be low-end models. This gravy train also seems likely to continue far into the fu-ture. The survey states that conce users know their way around a deaktop-model page printer, few will context going hack to imment technology

The big winners in this user sovement are likely to be IBM and Xerox Corp., which still and Kerox Corp., which still dominate the page printer mar-let at IBM mainframe sites. To-gether, the pair account for 85% of installed page printers. But CI said industry soothsayers should keep an eye peeled for Newlett-Packard Co., which is shaping up-ar a dark horne candidate— 75% of those surveyed plan on hunten as IBP proteste.

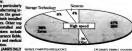
sed page printers inc insuce and insurance for

42% 70% 73% Page printers Titing printers









INSIDE LINES

They want to pump it up. The stepped-up technology cycles and recent blitzkrieg of product introductions coming out of the fabled mills of DEC may be indicative of things to come. With the forecast of dismal quarterly financials froming, several observers claim there is a major reorganisation der way at DEC, with more emphasis on pu

Bandages on the bLeading Edge. Things are beginning to look up for troubled Canton, Mass.-based Leading Edge Hardware Products and parent Leading Edge Products, Hardware Products and parent Leading Edge Products, which owes \$11 million to credition and in operating under the protection of Chapter 11 of the U.S. Bunkmytey Code. Court-appointed travetes Selven S. Grey has worked out a agreement in principle with Leading Edge supplier Disease Court-appointed Products of the Conference of the Con

Oh yealth Well, watch this! With Intel's expected lunching of its 33-MHz microspocosoor this spring, on-upsatable will climb to see height, about yources said. Having been briefed by IBM and Compag, industry sources say that IBM will amonance — but not make available—it in 33-MHz-based 356 systems at Comdex/Spring 969 in Clica-po. Sources and that Compag will then wait two weeks to amounce its 33-MHz mechine, which is expected to be low-er in price and overlable sooner than the IMM mechine.

Will they ring in the bell? The telecom market is anx-iously awaiting mid-April, when Merrill Lynch is expected to announce the winner of what could be one of the largest to announce the winner of what could be one of the largest private-nector lebocommunication contracts in history. The financial services just will choose between AT&T and MCI to supplement—on a possibly supplement—in insternal to 1800 million per year in internal costs, and DAWgree Ps-ternos, executive vice-president of perstronos/systems and telecommunications. As with the multibilities obtain referral PTS-2000*resorters, each bidder has lined up systems inser-gentions on its bids. MCI is teamed with EDS and EBM, while AT&T is bidding with Computer Science.

Intervenation Cooking lies a more maderor in for-mer robust self, interface west cost lies a limb after a core of precisive publicly. Alternation was no post, according to a precisive publicly. Alternation was no post, according to a protective publicly. Alternation was not post to get come to book need they were let into the short /mr "just to get come was noticed to the protection length of the control of the precisi state and the control of the control of the control to the control of the control of the control of the control length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the control of the control of the length of the control of the length of the l

Come one, come all to the sight-news ball. Scoops, acandais, acoms and acrosms—if they're lagit, se'll zerve as the measure. Ye of an always been able to call in to the hot line at 800-345-6474 or 508-679-0700. Now you can instription with our bulletin board by hitching your modern to 508-655-0165, you can point News Editor Pete Barthild in the right direction or anaisi journal for an arrively of other societying zer-direction or anaisi journal for an arrively of other societying zer-

Why can't mainframes speak English?

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software, logging onto the mainframe, and wading through the passwords and commands to arrive at the E-Mail screen.

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